


**KMC
CONTROLS**
**5901 Airflow
Measurement
System**



KMC CONTROLS 5901 Airflow Measurement System User Guide

[Home](#) » [KMC CONTROLS](#) » KMC CONTROLS 5901 Airflow Measurement System User Guide 

Contents

- 1 KMC CONTROLS 5901 Airflow Measurement System
- 2 INTRODUCTION
- 3 LOGIN WINDOW
- 4 POINT-TO-POINT CHECKOUT TASKS
- 5 DAMPER SPAN CALIBRATION TASKS
- 6 LEARNING MODE TASKS
- 7 ABOUT TESTING AND BALANCING AFMS
- 8 DEVICE WINDOW
- 9 SECURITY WINDOW
- 10 FIRMWARE UPDATE WINDOW
- 11 RECOVERING AN UNKNOWN IP ADDRESS
- 12 CHANGING YOUR COMPUTER'S ADDRESS
- 13 TROUBLESHOOTING
- 14 HANDLING PRECAUTIONS
- 15 Documents / Resources
 - 15.1 References



KMC CONTROLS 5901 Airflow Measurement System



INTRODUCTION

This document guides users through the checkout and commissioning of an Airflow Measurement System. It is designed to aid in completing the tasks on the Note Sheets for AFMS Checkout and Commissioning.

Ethernet-enabled “E” AFMS models with the latest firmware can be configured with a web browser from pages served from within the AFMS controller. The AFMS controller has the following default network address values:

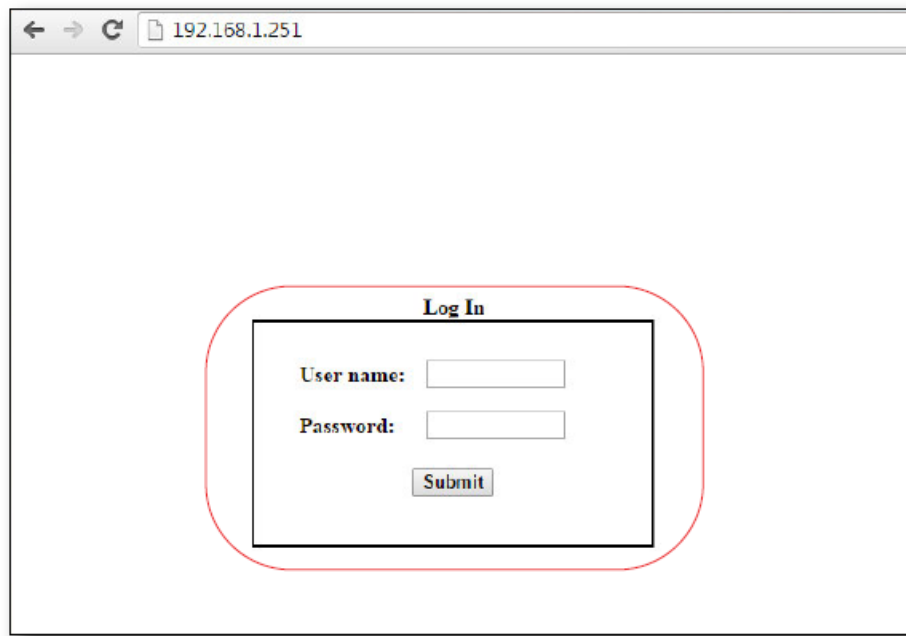
- IP address—192.168.1.251
- Subnet mask—255.255.255.0
- Gateway—192.168.1.1

NOTE:

- See the AFMS selection guide for a table of other tools that can be used to configure some or all AFMS parameters.
- The default IP address of the BAC-5051(A)E router is 192.168.1.252.

LOGIN WINDOW

To log in to an AFMS controller with a web browser:

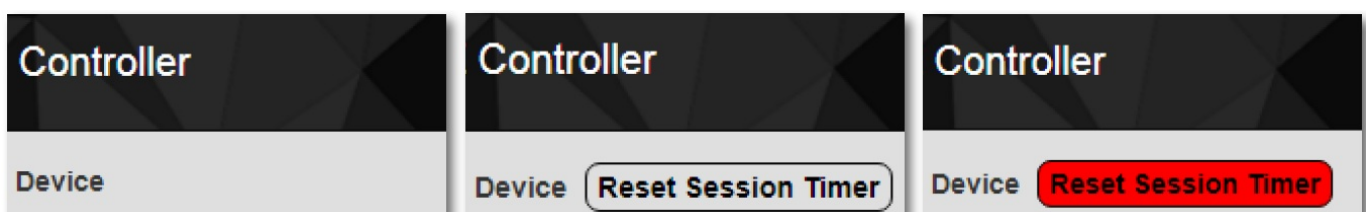


1. Connect the AFMS to an Ethernet port by doing one of the following:
 - Connect directly to the computer, which typically requires changing the computer IP address. See Changing Your Computer's Address.
 - Connect to a subnet that recognizes address 192.168.1.251.
2. Connect power to the controller. (See the AFMS installation guide.)
3. Open a new browser window.
4. Enter the address 192.168.1.251.
5. In the login window, enter the following:
 - User name: admin
 - Password: admin

NOTE: The login screen will be accessible about 30 seconds after a controller has restarted or had power first applied. (See also Recovering an Unknown IP Address.)
6. After logging in, change the controller parameters as needed.
 - To change passwords and add users, see Security Window.
 - To change the IP address, see Device Window.

After login, a ten-minute timeout starts. The timer resets to ten minutes for any of these conditions:

- A page is refreshed or saved.
- The menu (on the left side of the screen) is clicked to go to a different page.
- The flashing Reset Session Timer (which appears two minutes before the end of the timeout period) is pushed.



POINT-TO-POINT CHECKOUT TASKS

The steps for each point-to-point checkout task are presented in subsections below. Complete each task/subsection in the order presented.

Verify the Correct Application for the Installation

NOTE:

Check and (if needed) change the base application under Restore > Factory before configuring setpoints or other system options. Changing the base application will reset setpoints and system options to their factory defaults.

Under Application > Restore, next to Factory, verify that the correct application is configured for the AFMS installation:

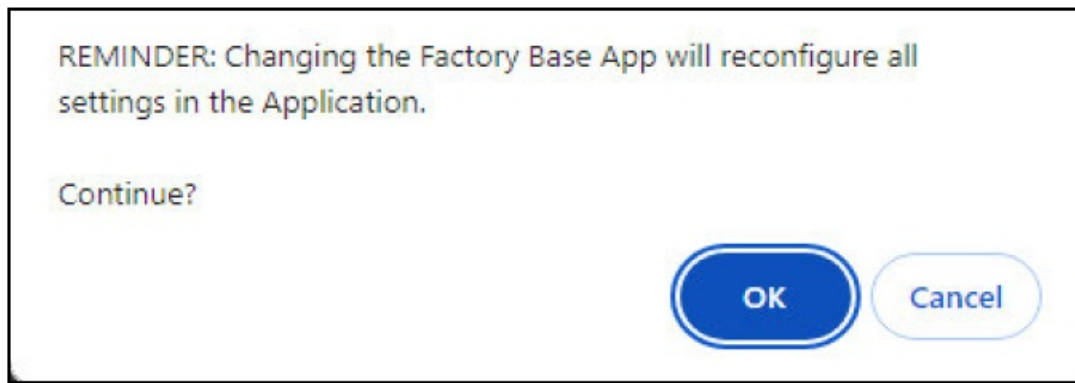
- AMSO [English]: Standard outside air damper application with English units
- AMSO [Metric]: Standard outside air damper application with Metric units
- AMSOP [English]: Pressure assist outside air damper application with English units
- AMSOP [Metric]: Pressure assist outside air damper application with Metric units
- AMSRP [English]: Pressure assist return air damper application with English units
- AMSRP [Metric]: Pressure assist return air damper application with Metric units

The image displays two screenshots of a web-based configuration interface for a device. The left sidebar contains a menu with options: Device, Security, Application, Restore (highlighted in green), AFMS, Firmware, Help, and Sign Out. The main content area is titled 'Restore' and contains four input fields: Base App, App ID, App Name, and Factory. In the top screenshot, the 'Factory' dropdown menu is open, showing a list of applications: AMSO [English], AMSO [Metric], AMSOP [English], AMSOP [Metric], AMSRP [English], and AMSRP [Metric]. A red circle highlights this dropdown. In the bottom screenshot, the 'Factory' dropdown is closed, and a green 'Save' button is highlighted with a mouse cursor. A 'Refresh' button is also visible next to the 'Save' button.

If you need to change the configured application:

1. Next to Factory, select the correct application for the AFMS installation.
2. Click Save.

NOTE: A window appears with “REMINDER: Changing the Factory Base App will reconfigure all settings in the Application. Continue?”

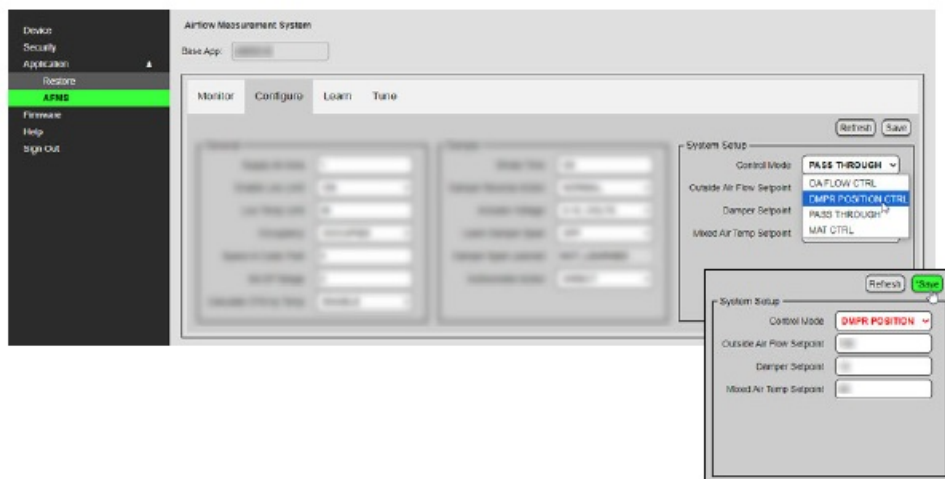


3. Click OK.
4. In the reminder pop-up, click OK.
5. Wait about 20 seconds for the AFMS to restart, then log in again.

Set Control Mode to Damper Position Control

Under Application > AFMS > Configure, in the System Setup group:

1. For Control Mode, select DMPR POSITION CTRL from the drop-down menu.
2. Click Save.



Verify Pressure Transducer Settings

Do the following for all pressure transducers (supply and pressure assist) that were installed, following their manufacturer's installation instructions:

1. Verify that the signal output type is set to volts.
2. Verify that the transducer is set to unipolar mode.
3. If the transducer has several pressure range options, verify that the correct range is set (according to the pressure range of the unit).

Make Pressure Transducer Zero Adjustment

- Zero out all pressure transducers (supply and pressure assist) that were installed, following their manufacturer's installation instructions.
- You will need to expose the transducer's high and low ports to ambient pressure by temporarily removing the tubing from the ports. After zeroing the transducer, reconnect each tube to the correct port.

Set the Supply Air Differential Pressure Range (5901- AFMS only)

Under Application > AFMS > Configure, in the General group:

1. For the SA DP Range, enter the maximum number of inches of the water column that the supply air pressure transducer can measure.

NOTE: For example, a TPE-1475-21, can measure up to 2" wc, so enter 2. A TPE-1475-22 can measure up to 10" wc, so enter 10. (A 9311-AFMS can measure up to 2" wc.) Some AFMS installations may use other pressure transducers.

2. Click Save.

The screenshot shows the web interface for the -5901CE-AFMS Controller. The left sidebar contains navigation links: Device, Security, Application, Restore, AFMS (highlighted), Firmware, Help, and Sign Out. The main content area is titled 'Airflow Measurement System' and has a 'Base App' dropdown. Below this are four tabs: Monitor, Configure (selected), Learn, and Tune. The 'Configure' tab is divided into two sections. The left section, labeled 'General', contains several input fields: 'Supply Air Area', 'Enable Low Limit' (a dropdown), 'Low Temp Limit', 'Occupancy' (a dropdown), 'Space in Cubic Feet', 'SA DP Range' (highlighted with a red box and containing the text '[entered max \"wc here\"]'), and 'Calculate CFM by Temp' (a dropdown). The right section contains two columns of input fields for 'Fan Data' and 'Fan Temp'. At the top right of the 'Configure' tab, there are 'Refresh' and 'Save' buttons.

Set the Supply Air Area

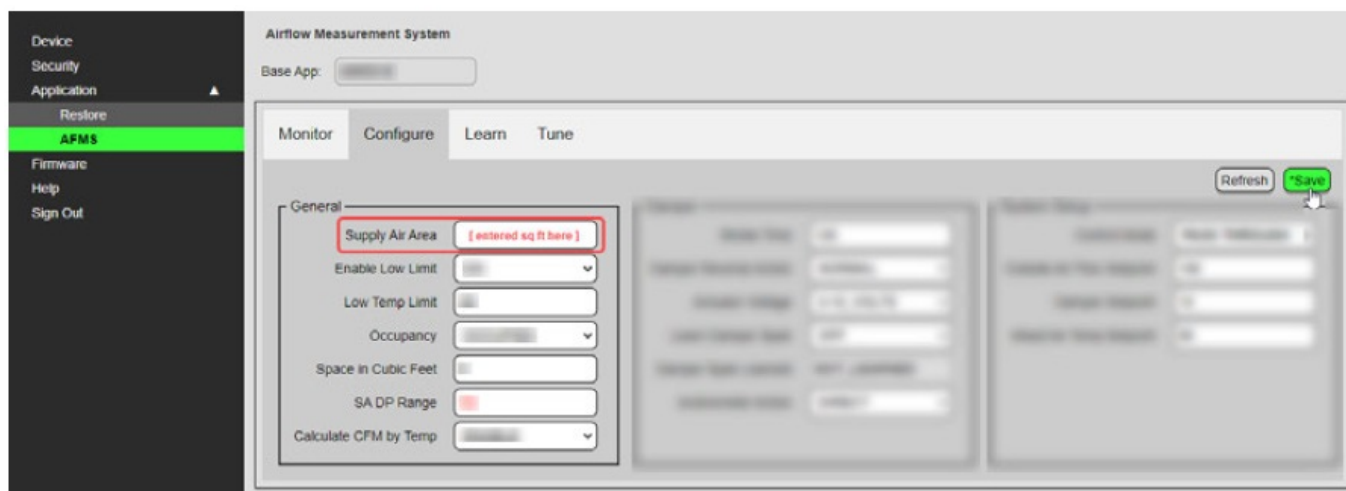
Under Application > AFMS > Configure, in the General group:

1. For Supply Air Area:

- If the supply air pickup tubes were installed on the supply air fan bell, enter the square foot measurement of the fan inlet.
- If the supply air pickup tubes were installed in the supply air duct, enter the square foot measurement of the duct cross-section where the tubes are located.

NOTE: For assistance calculating the area, use the Free Area Calculator in the Note Sheets for AFMS Checkout and Commissioning.

2. Click Save.



Inspect Pressure Assist Pickup Tubes (PA only)

For pressure assist applications, ensure that the pickup tubes were installed in the correct location per the AFMS installation guide.

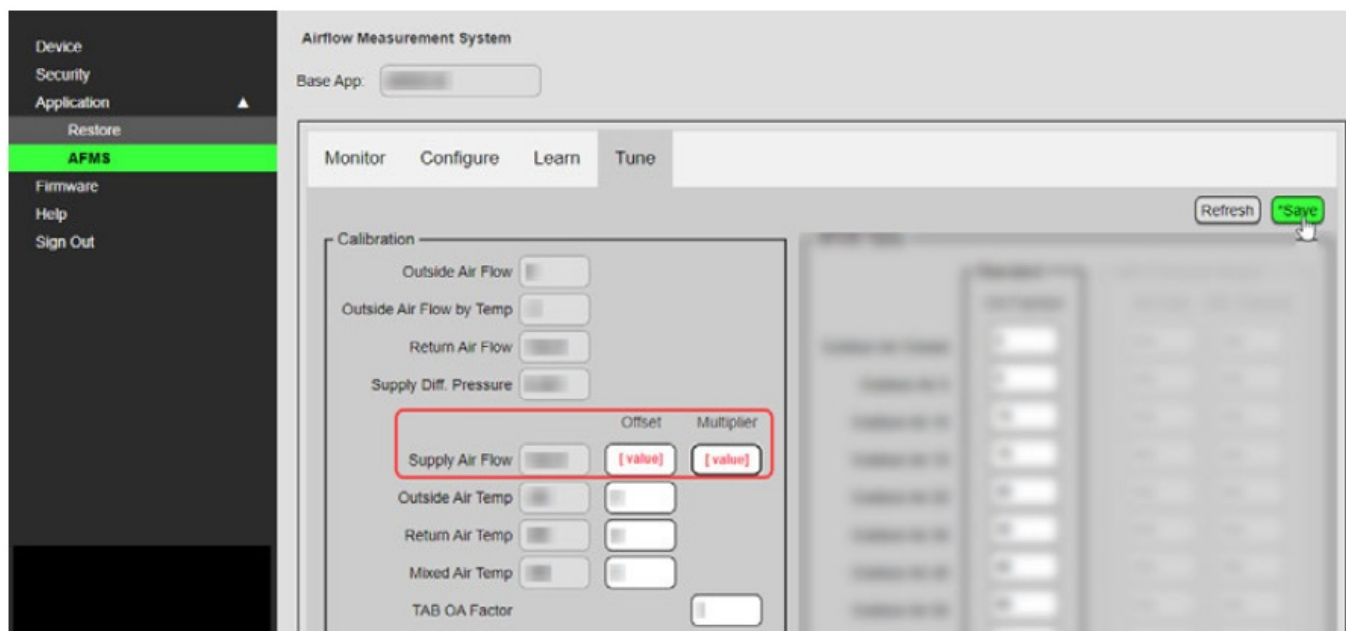
Calibrate the Supply Air Flow

Under Application > AMFS > Tune, in the Calibration group:

1. Do any of the following:

- In the Offset column for Supply Air Flow, enter the CFM offset (determined by a TAB technician) for the supply air pressure transducer.
- In the Multiplier column for Supply Air Flow, enter the multiplier (determined by a TAB technician) for the supply air pressure transducer.

2. Click Save.

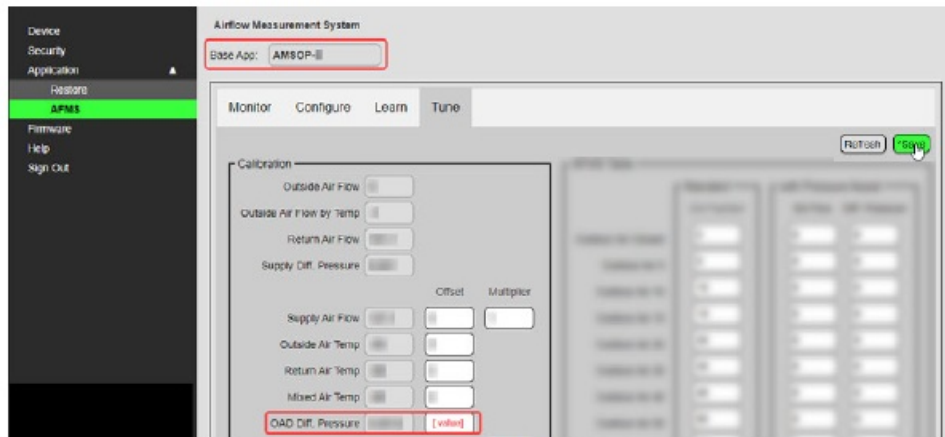


Calibrate OAD/RAD Diff. Pressure (pressure assist only)

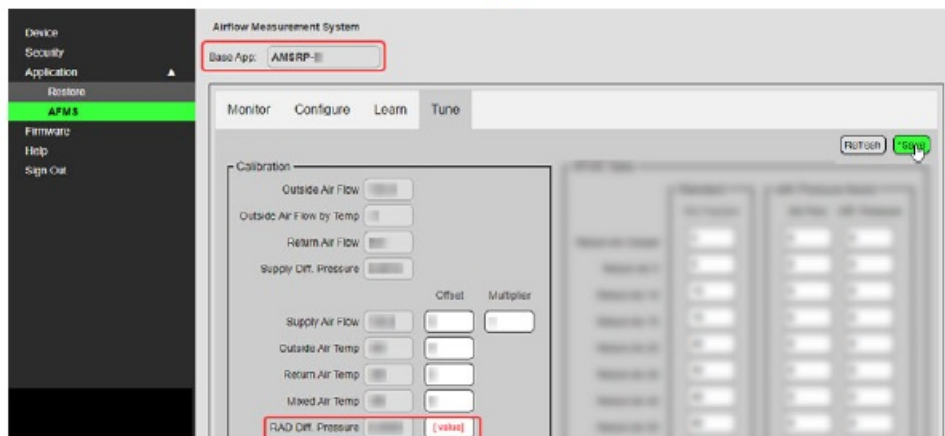
For pressure assist applications, under Application > AFMS > Tune, in the Calibration group:

1. In the Offset column for OAD Diff. Pressure / RAD Diff. Pressure enters the differential pressure offset (determined by a TAB technician) for the pressure assist pressure transducer.

2. Click Save.



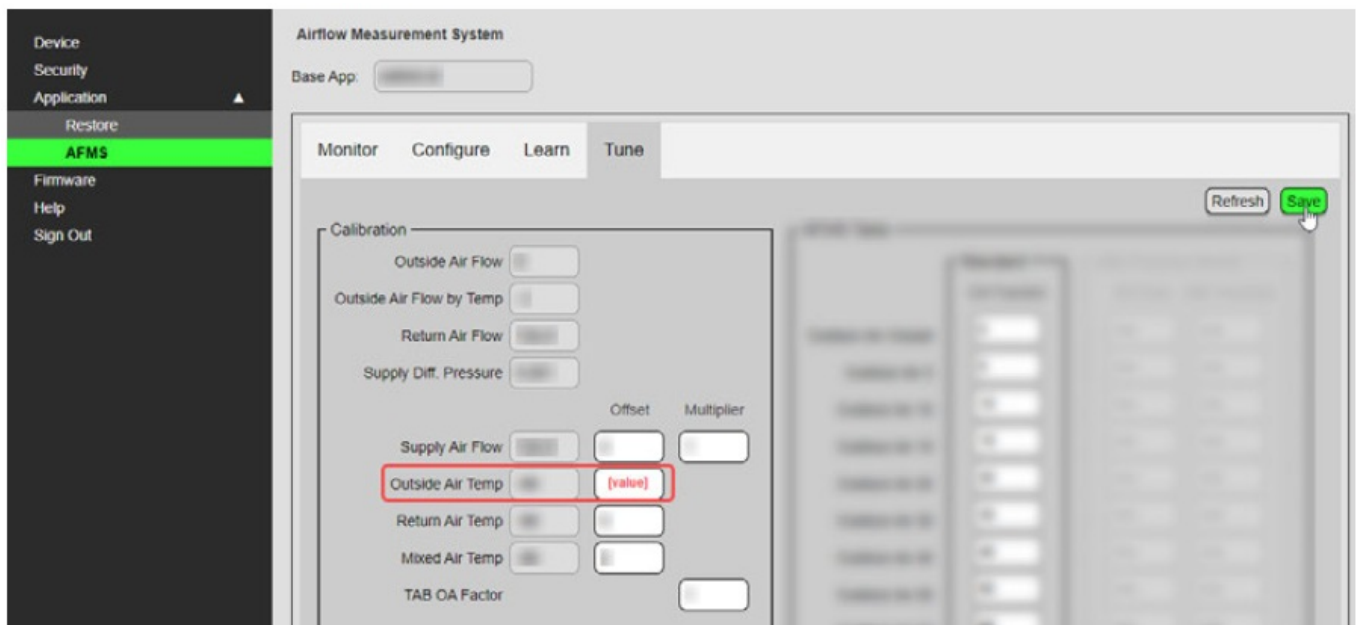
or



Verify and Calibrate Outside Air Temperature

Under Application > AFMS > Tune, in the Calibration group:

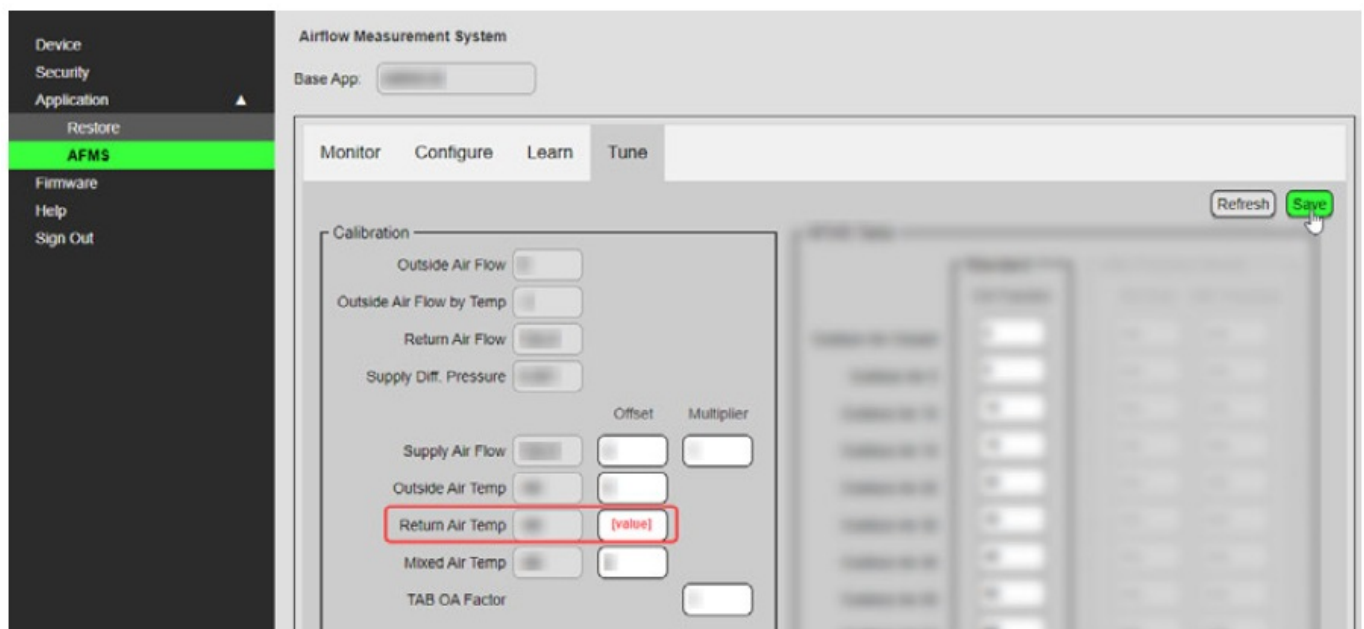
1. Locate the OAT sensor's reading, next to Outside Air Temp.
2. Using a NIST-traceable instrument, measure the temperature near the OAT sensor.
3. Compare the two values.
4. Enter the Offset for Outside Air Temp.
5. Click Save.



Verify and Calibrate Return Air Temperature

Under Application > AFMS > Tune, in the Calibration group:

1. Locate the RAT sensor's reading, next to Return Air Temp.
2. Using a NIST-traceable instrument, measure the temperature near the RAT sensor.
3. Compare the two values.
4. Enter the Offset for Return Air Temp.
5. Click Save.

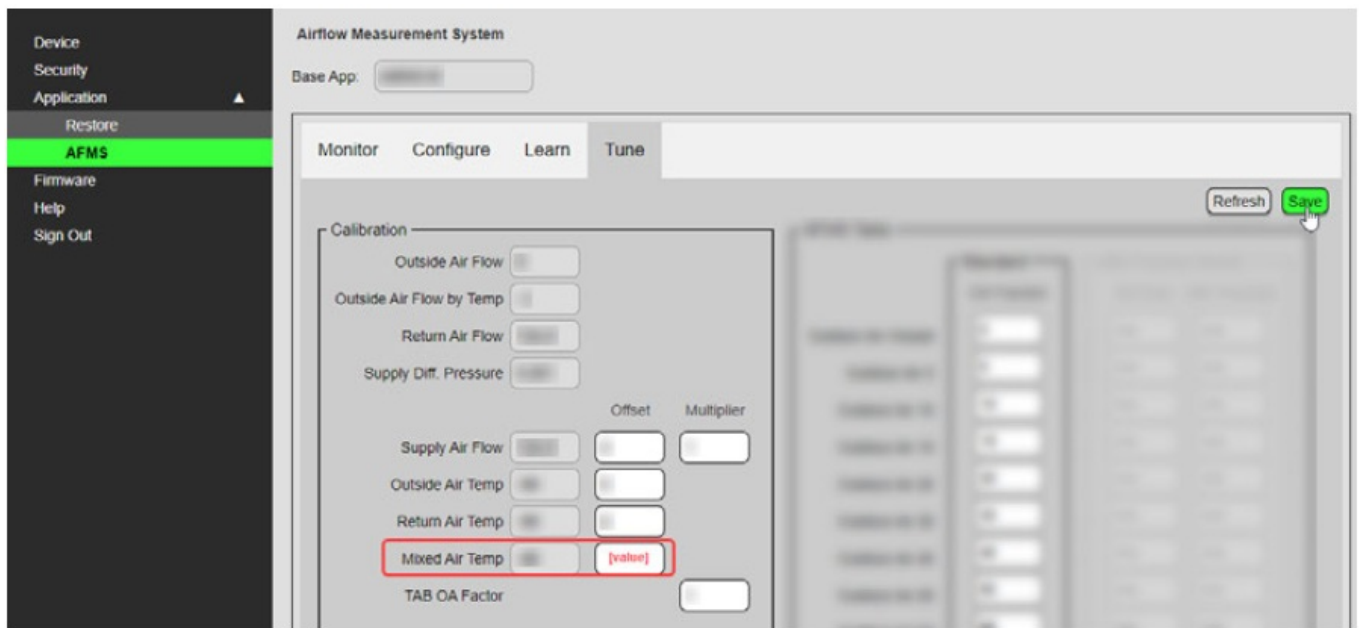


Verify and Calibrate Mixed Air Temperature

Under Application > AFMS > Tune, in the Calibration group:

1. Locate the MAT sensor's reading, next to Mixed Air Temp.
2. Using a NIST-traceable instrument, measure the temperature near the MAT sensor.
3. Compare the two values.
4. Enter the Offset for Mixed Air Temp.

5. Click Save.



Point-point-checkout is completed. Continue to the Damper Span Calibration Tasks.

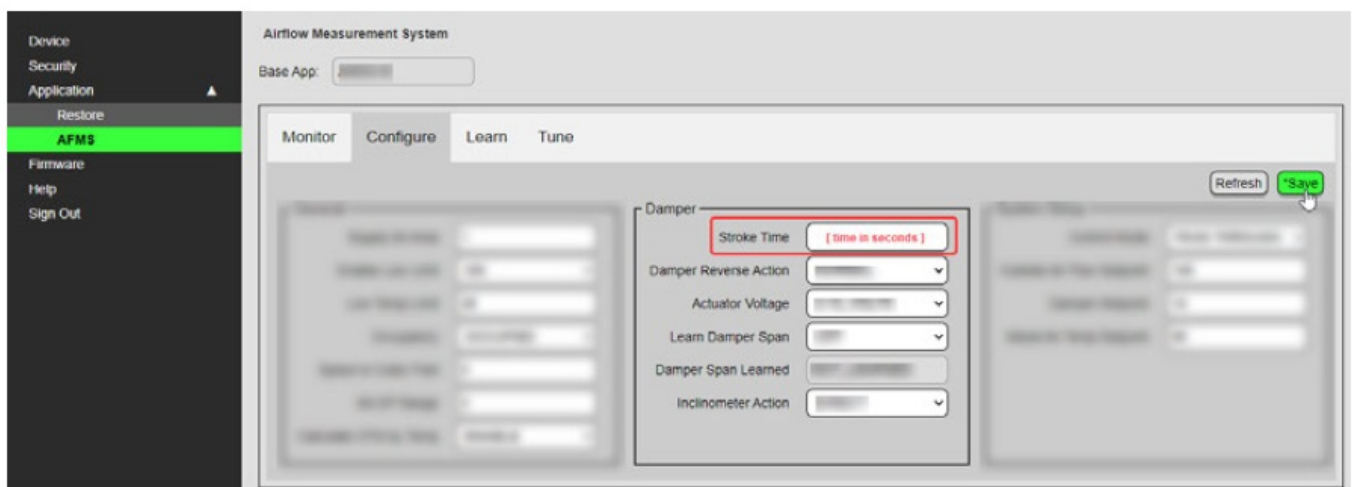
DAMPER SPAN CALIBRATION TASKS

After completing the Point-to-Point Checkout Tasks, calibrate the damper span. The steps for each damper span calibration task are presented in subsections below. Complete each task/subsection in the order presented.

Set the Damper Stroke Time

Under Application > AFMS > Configure, in the Damper group:

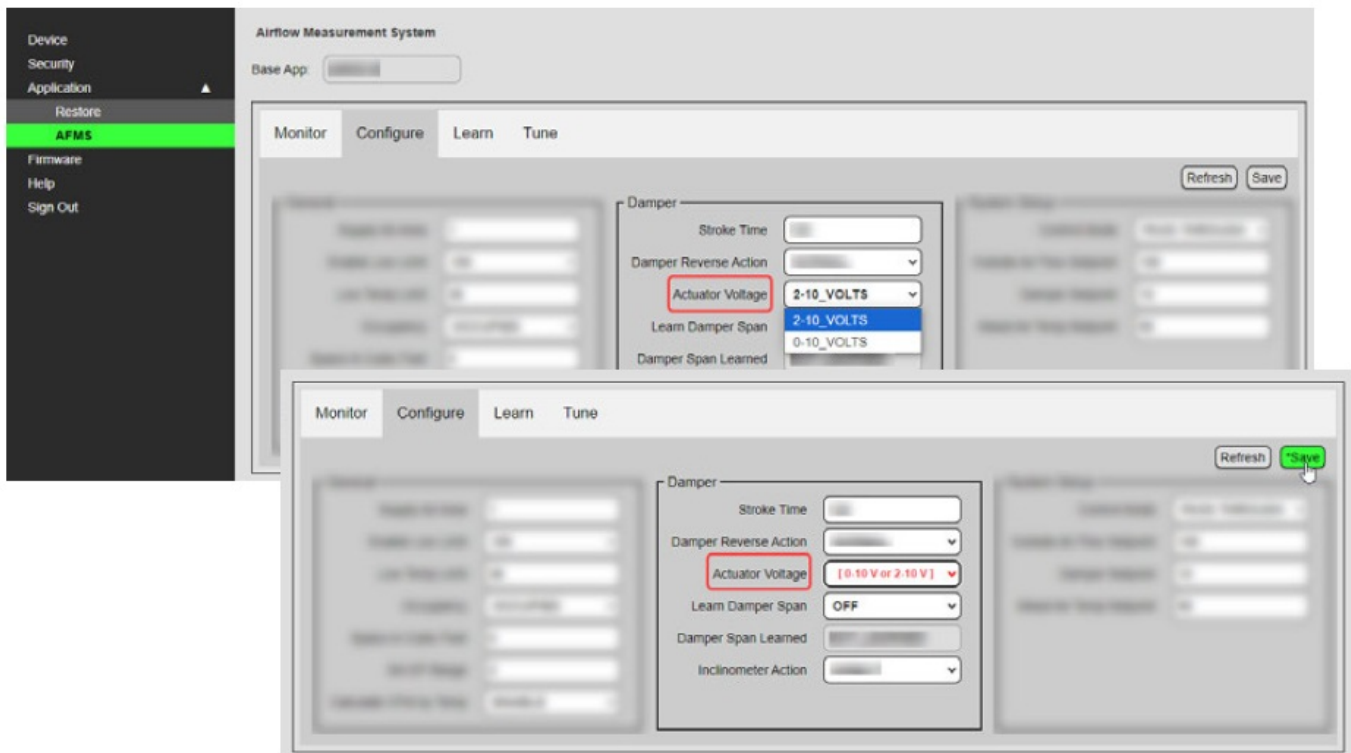
1. For Stroke Time, enter the time (in seconds) that it takes for the actuator to move the damper from fully closed to fully open.
2. Click Save.



Set the Actuator Voltage Range

Under Application > AFMS > Configure, in the Damper group:

1. For Actuator Voltage, select the voltage range of the damper actuator from the drop-down menu (2 to 10 volts or 0 to 10 volts).
2. Click Save.

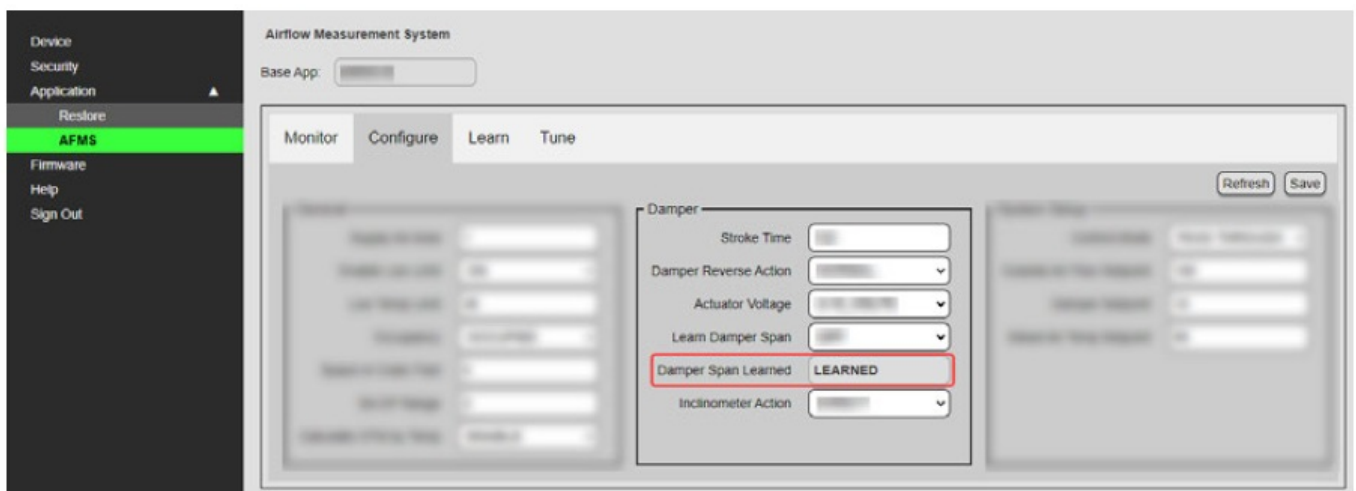
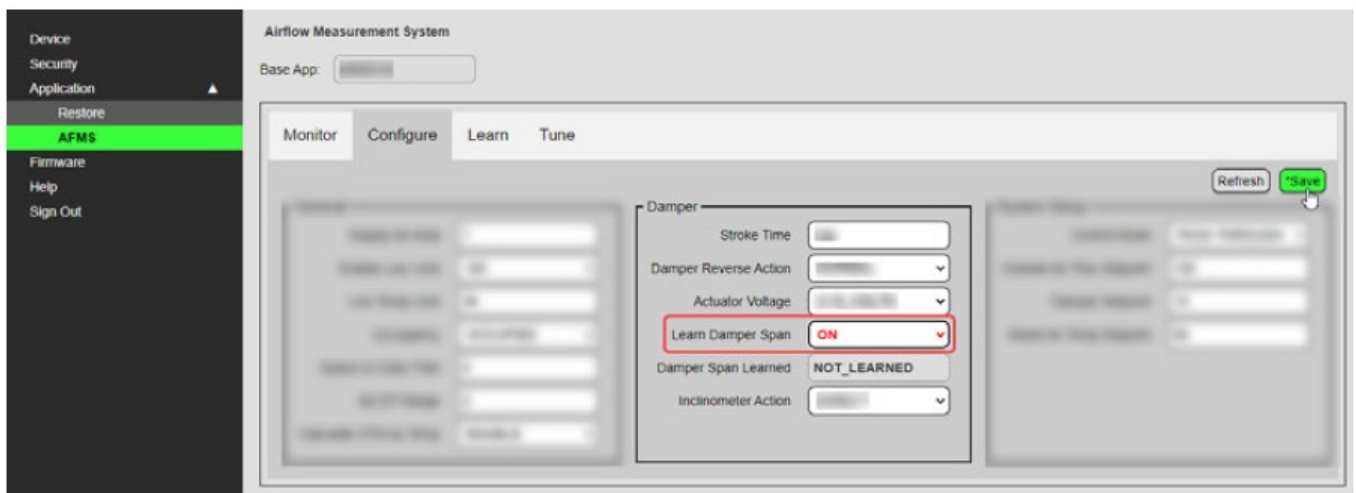


Turn On Learn Damper Span, then Verify

Before the AFMS can run Learn Mode, it must learn the minimum and maximum incline of the damper using the inclinometer. The Learn Damper Span sequence will take 3 to 5 minutes to complete.

Under Application > AFMS > Configure, in the Damper group:

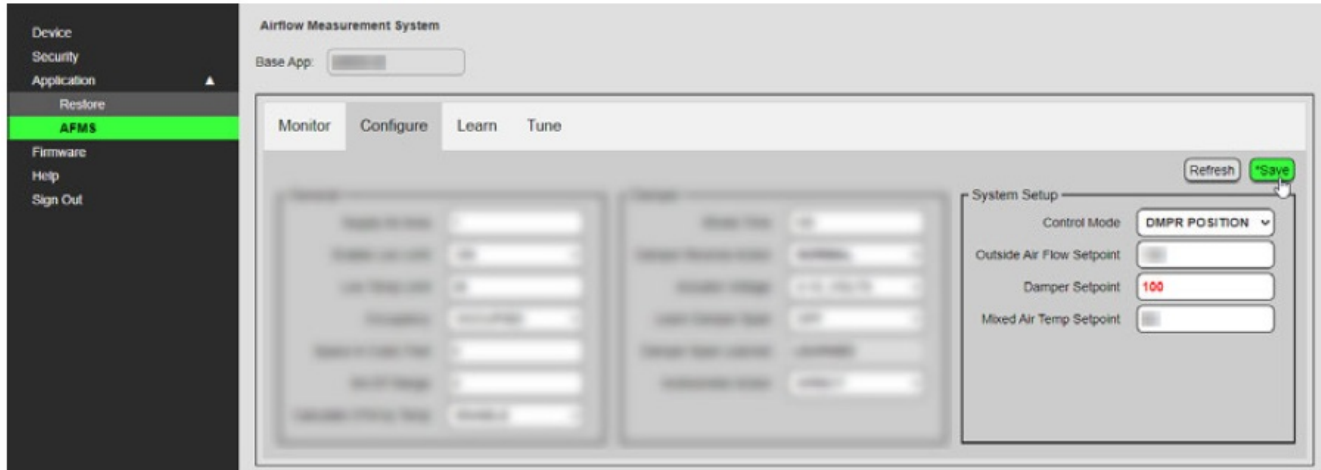
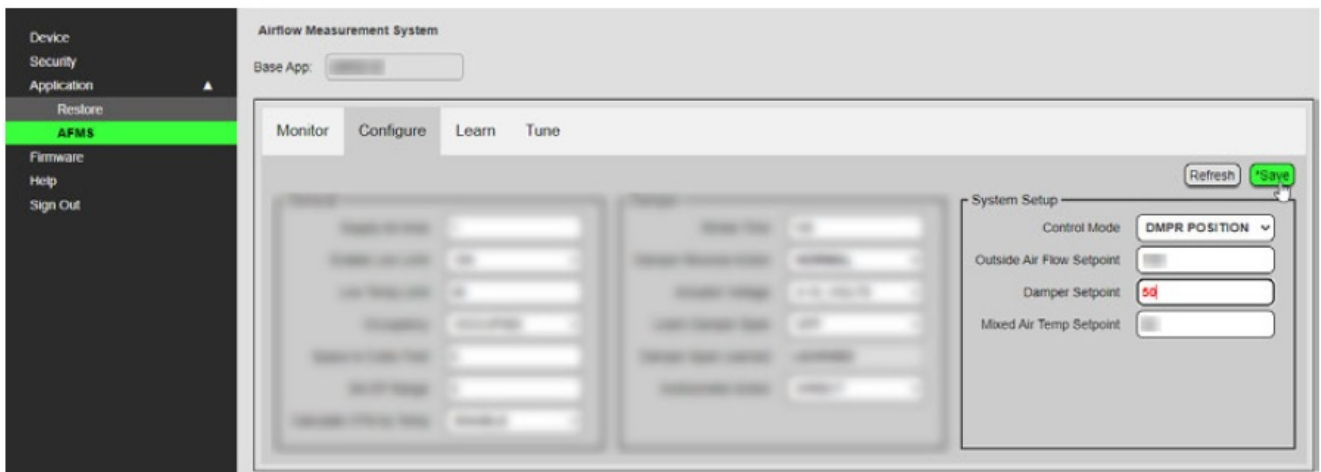
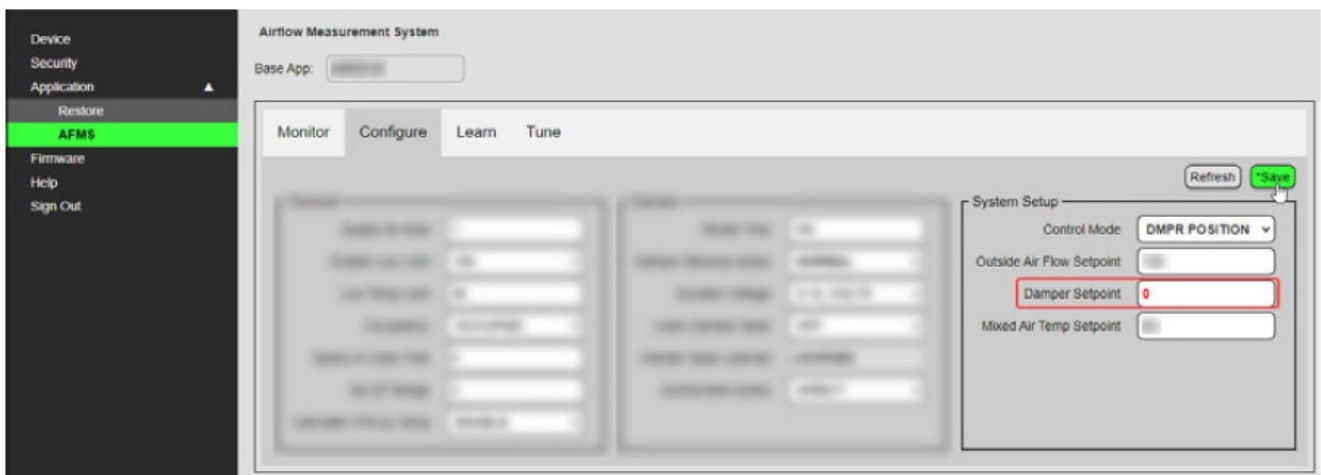
1. For Learn Damper Span, select ON from the drop-down menu.
2. Click Save.
3. After 3 to 5 minutes, verify that Damper Span Learned reports LEARNED.



Stroke Damper and Visibly Verify Positions

Under Application > AFMS > Configure, in the System Setup group:

1. Ensure that DMPR POSITION is set for Control Mode.
2. For the Damper Setpoint, enter 0.
3. Click Save.
4. Once the actuator stops moving, visibly verify that the damper is fully closed.
5. For the Damper Setpoint, enter 50.
6. Click Save.
7. Once the actuator stops moving, visibly verify that the damper is 50% open/ closed.
8. For the Damper Setpoint, enter 100.
9. Click Save.



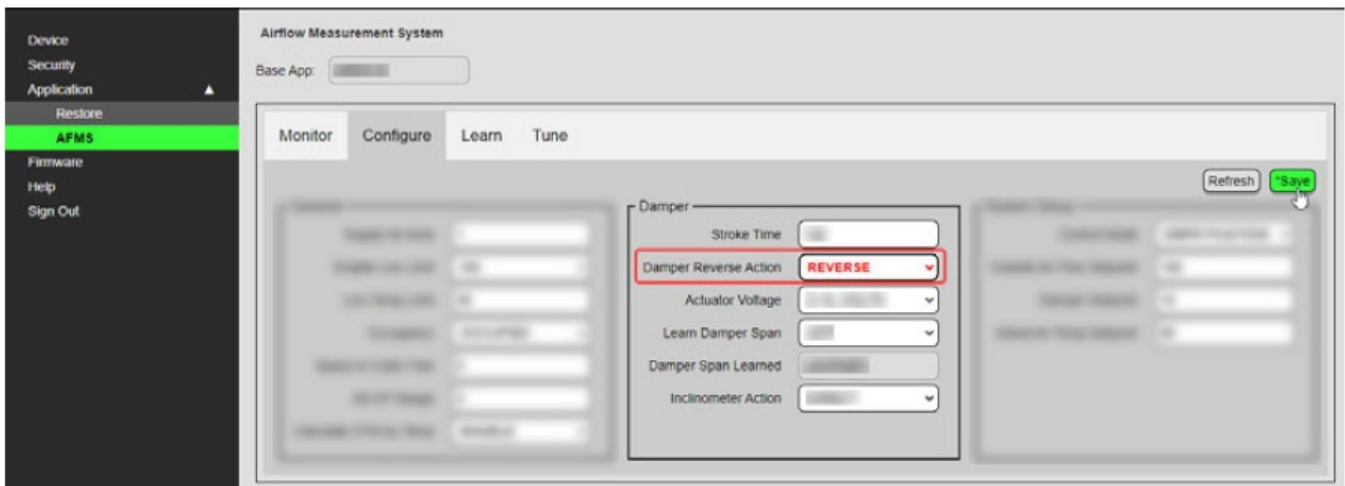
10. Once the actuator stops moving, visibly verify that the damper is fully open.

If the actuator is moving the damper in reverse (i.e. 10 volts = closed), see the next section, “Set Damper Reverse Action”.

Set Damper Reverse Action (if needed)

If visual inspection (see the previous section) revealed that the damper actuator moves in reverse action (i.e. 10 volts = closed), under Application > AFMS > Configure, in the Damper group:

1. For Damper Reverse Action, select REVERSE from the drop-down menu.
2. Click Save.

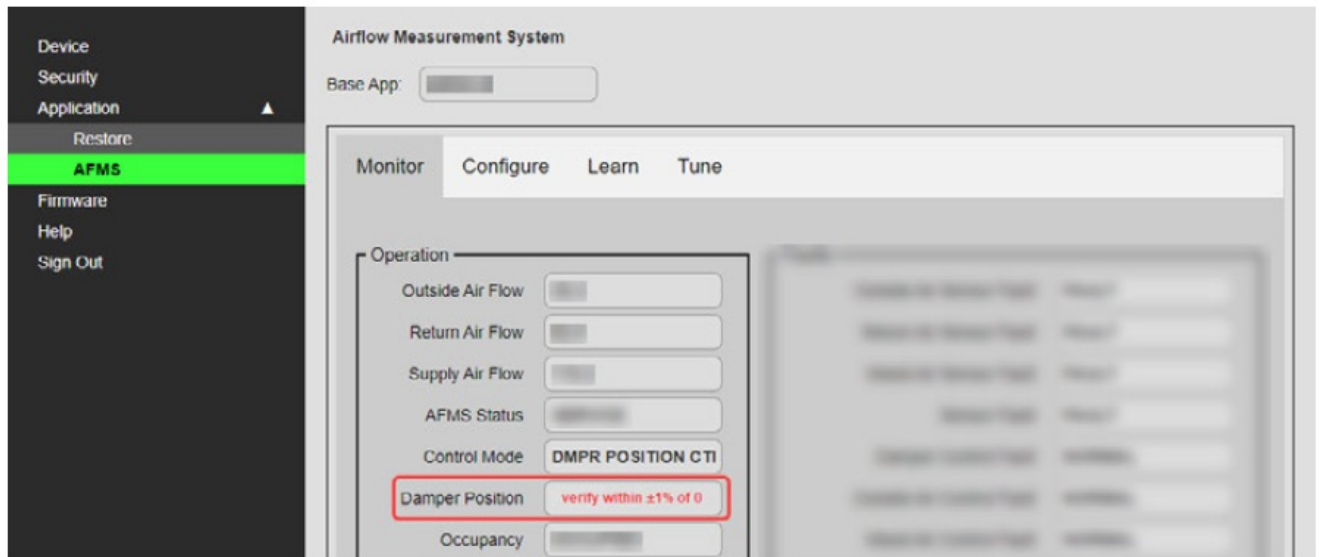
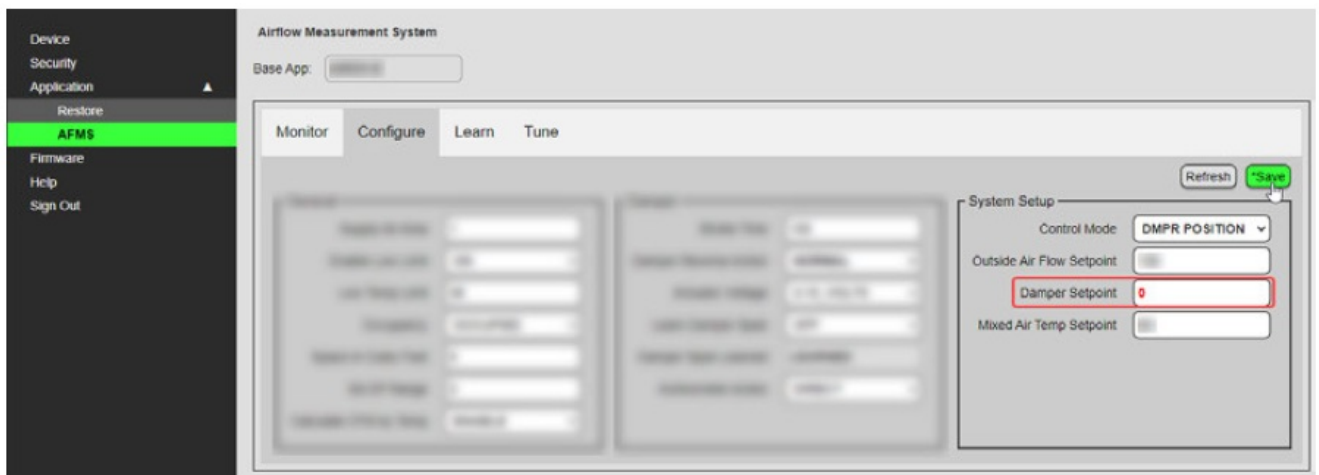


(if needed)

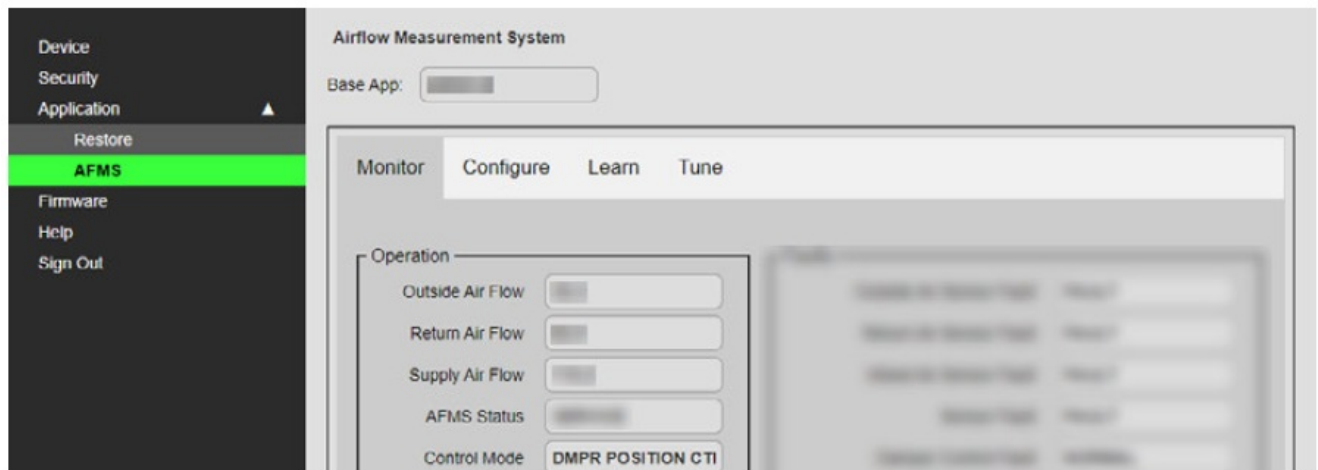
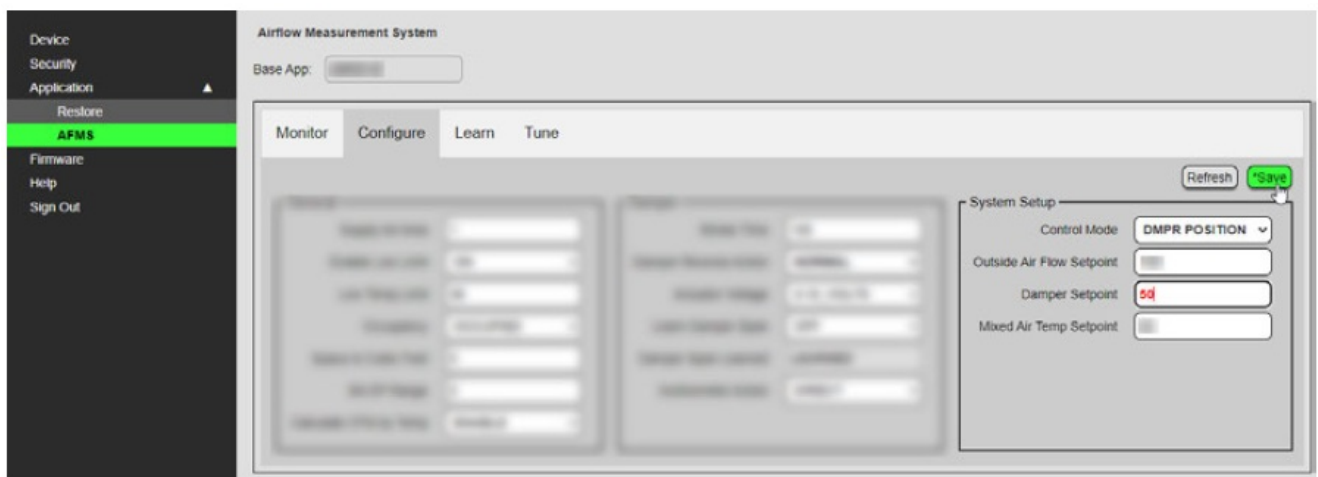
Stroke Damper and Verify that Reported Damper Position Follows

1. Go to Application > AFMS > Configure > the System Setup group:
2. Ensure that DMPR POSITION is set for Control Mode.
3. For Damper Setpoint, enter 0.
4. Click Save.
5. Once the actuator stops moving, visibly verify that the damper is fully closed.
6. Go to the Monitor tab.
7. Verify that Damper Position (in the Operation group) reports a value within $\pm 1\%$ of 0.

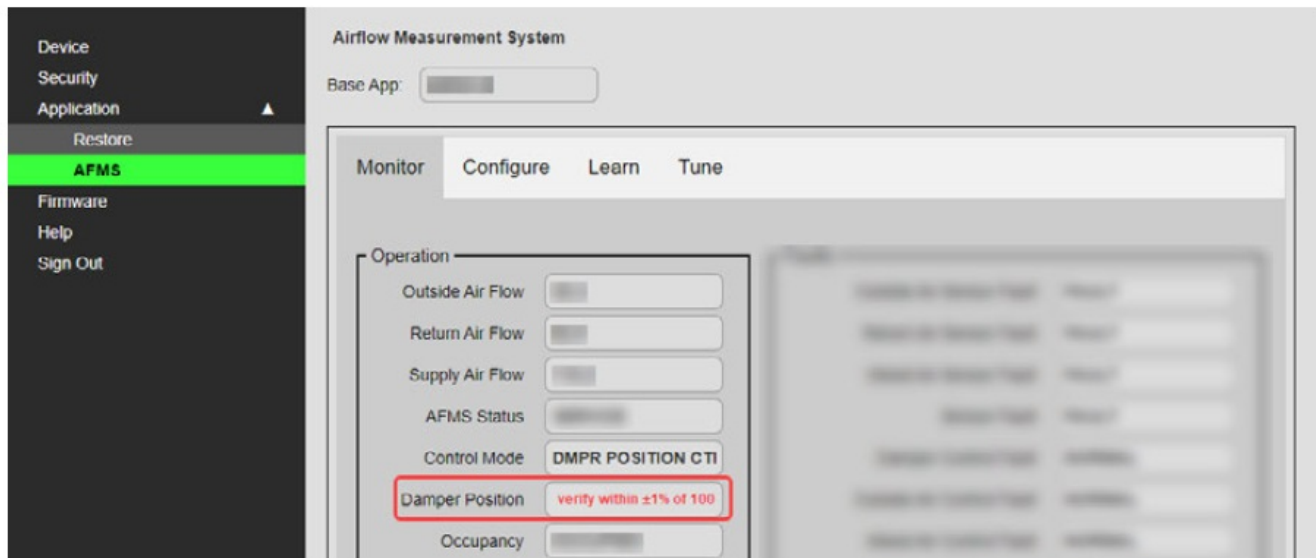
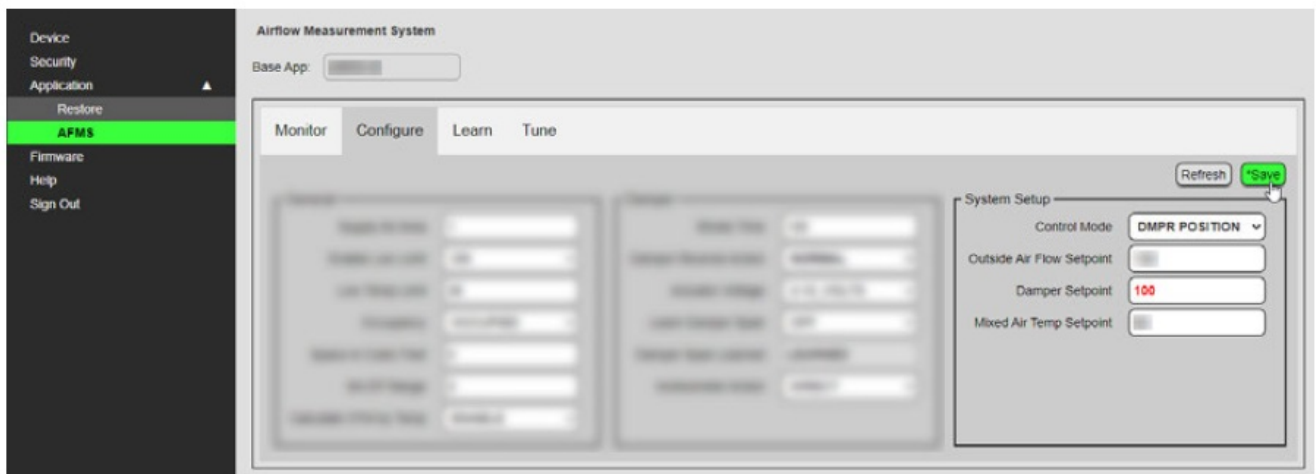
NOTE: The inclinometer can detect very small movements of the damper assembly.



8. Go to the Configure tab again.
9. For the Damper Setpoint, enter 50.
10. Click Save.
11. Once the actuator stops moving, visibly verify that the damper is 50% open/ closed.



12. Go to the Monitor tab again.\
13. Verify that the Damper Position reports a value within $\pm 1\%$ of 50.
14. Go to the Configure tab again.
15. For the Damper Setpoint, enter 100.
16. Click Save.
17. Once the actuator stops moving, visibly verify that the damper is now fully open.
18. Go to the Monitor tab again.
19. Verify that the Damper Position reports a value within $\pm 1\%$ of 100.

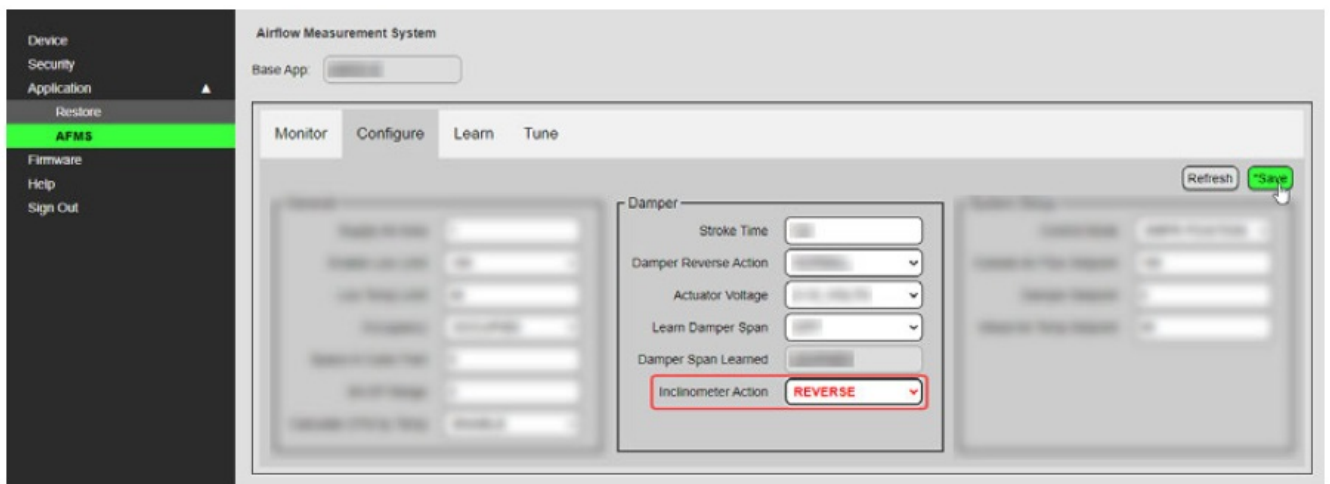


If the Damper Position reports values that are the opposite of the entered Damper Setpoint, see the next section, “Set Inclinator Action to Reverse”.

Set Inclinator Action to Reverse (if needed)

For the standard (AMSO) application or OAD Pressure Assist (AMSOP) application, if the inclinometer was mounted on a horizontal return air damper blade because the outside air damper blades are vertical, then you need to set Inclinator Action to REVERSE. If testing revealed that Damper Position reports values that are the opposite of the Damper Setpoint (see the previous section), under Application > AFMS > Configure, in the Damper group:

1. For Inclinator Action, select REVERSE from the drop-down menu.
2. Click Save.



(if needed)

Damper span calibration is completed. Continue to the Learning Mode Tasks.

LEARNING MODE TASKS

The steps for each learning mode task are presented in subsections below. Complete each task/subsection in the sequence presented.

Prerequisite Tasks

Before starting Learning Mode, for valid results, ensure that:

- The sensors are calibrated (Point-to-Point Checkout Tasks).
- AFMS is configured properly (Damper Span Calibration Tasks).
- The supply air fan is running at a normal, steady rate (without hunting or sporadic spikes).
- If the unit has a heat recovery wheel, it is turned off.
- If any heating or cooling sources are located upstream of the MAT sensor, they are turned off.
- If the unit has a bypass damper, it is set to 100% open.

Starting Learning Mode

1. Go to Application > AFMS > Learn.
2. Note whether Learn Ready reports READY or NOT READY.

If READY is displayed, Learning Mode can be started manually. Otherwise, see Enabling Learning Mode to Auto Start.

NOTE:

In special cases, you may consider the Alternative to Running Learning Mode.

Manually Starting Learning Mode

1. Leave Min Delta Temp set to the default or adjust if needed.

NOTE: If the ΔT becomes less than Min Delta Temp, the AFMS controller will abort Learning Mode. This is to ensure that the controller does not receive unusable learning samples. Setting Min Delta Temp at a 15°F or larger difference is recommended.

2. Leave Time Between Samples (Seconds) set to the default or adjust it if needed.

NOTE: Most often, the Time Between Samples (Seconds) can be left on the default (60 seconds). You might increase the value if the damper Stroke Time is longer than that of a typical unit, or if the damper actuator requires extra time to respond. You might decrease it if a large ΔT is present and time at the site is limited. However, too little time between samples could result in inaccurate measurements.

3. For Learning Mode, select ACTIVE.
4. Click Save.
5. Wait for Learning Mode to complete.

NOTE:

To calculate the total time (in minutes) that Learning Mode should take to complete, multiply Time Between Samples (Seconds) by 91, then divide by 60.

Skip to Verify that AFMS Status is in Learning Mode.

Enabling Learning Mode to Auto Start

If Learn Ready reports NOT READY because of currently unfavorable temperatures, you may enable the AFMS to automatically start Learning Mode when it detects favorable temperatures later (overnight is likely).

1. Leave Min Delta Temp set to the default or adjust it if needed.

NOTE: If the ΔT becomes less than Min Delta Temp, the AFMS controller will abort Learning Mode. This is to ensure that the controller does not receive unusable learning samples. Setting Min Delta Temp at a 15°F or larger difference is recommended.

Leave Auto Start Delta Temp set to the default, or adjust it if needed.

NOTE: When the ΔT reaches the Auto Start Delta Temp, Learning Mode will start. Learning Mode will be completed if the ΔT remains greater than the Min Delta Temp for the entire duration. An Auto Start Delta Temp that is at least 20°F more than the Min Delta Temp is recommended.

2. Leave Time Between Samples (Seconds) set to the default or adjust it if needed.

NOTE: Most often, the Time Between Samples (Seconds) can be left on the default (60 seconds). You might increase the value if the damper Stroke Time is longer than that of a typical unit, or if the damper actuator requires extra time to respond.

3. For Auto Learn Enable, select ON.

4. Click Save.

5. Wait for Learning Mode to complete during favorable temperatures (overnight is likely).

Airflow Measurement System

Base App:

Monitor Configure **Learn** Tune

Refresh **Save**

Learn Parameters

- Min Delta Temp
- Auto Start Delta Temp
- Outside Air Return Air Delta Temp
- Time Between Samples
- Date of Last Learn
- Outside Air Temp When Learned
- Learn Ready
- Auto Learn Enable**
- Learning Mode

Skip to Verify Learning Mode Completed and Record Date.

Verify that AFMS Status is in Learning Mode

Under Application > AFMS > Monitor, in the Operation group, verify whether AFMS Status reports LEARN MODE.

Airflow Measurement System

Base App:

Monitor **Configure** Learn Tune

Operation

- Outside Air Flow
- Return Air Flow
- Supply Air Flow
- AFMS Status**
- Control Mode

Verify Learning Mode Completed and Record Date

After the AFMS completes Learning Mode (approximately 2 hours), under Application > AFMS > Learn:

1. Locate the Date of the Last Learn (YYMMDD).
2. Enter the date into the Note Sheets for AFMS Checkout and Commissioning.

Alternative to Running Learning Mode

While not ideal, the damper characterization data can be calculated and entered manually in the AFMS Table. This should only be done if—in the allotted time for setting up the AFMS—the ΔT is unlikely to remain greater than the Min Delta Temp for the duration of Learning Mode.

To make the calculations, use the %OA/%RA equations found in ASHRAE Standard 111, section 7.6.3.3, “Flow Rate Approximation by Temperature Ratio”.

1. Go to Application > AFMS > Configure.
2. For the Damper Setpoint, enter the first damper position (Closed, i.e. 0) found in the AFMS Table (on the Tune tab).
NOTE: Note: Each subsequent time through this process, enter the next damper position from the table: 5, 10, 15, 20, 30, 40, 50, 60, 70, 80, 90, 100.
3. Click Save.
4. Go to the Monitor tab.
5. Allow the Outside Air Temp, Return Air Temp, and Mixed Air Temp to stabilize.
6. Depending on the application, calculate either the OA Fraction or RA Fraction, using the temperature readings and either the %OA or %RA equation from the standard.
7. Go to the Tune tab.
8. Enter the result into the OA Fraction column/ RA Fraction column (depending on the application).
NOTE: For Pressure Assist applications, also enter the Supply Air Flow reading into the SA Flow column and the OAD Diff. Pressure / RAD Diff. Pressure reading into the Diff. Pressure column.
9. Select Save.

Repeat those steps for the remaining 12 damper positions listed on the AFMS Table.

Access the AFMS Table and Record Data

Under Application > AFMS > Tune, in the AFMS Table group:

1. Locate the Characterized Airflow Performance® data, found in:

- The OA Fraction column (for both standard and outside air damper pressure assist applications)
- The RA Fraction column (for return air damper pressure assist applications only)
- The SA Flow column (for both types of pressure assist applications only)
- The Diff. Pressure column (for both types of pressure assist applications only)

2. Record the data into the Note Sheets for AFMS Checkout and Commissioning:

- For standard applications, use the AFMS Post Table.
- For pressure assist applications, use the AFMS PA Post Table.

The top screenshot shows the 'Standard' configuration of the AFMS. The 'Base App' is set to 'AFMS'. The 'AFMS Table' is displayed with the following columns: Outdoor Air Closed, Outdoor Air 5, Outdoor Air 10, Outdoor Air 15, Outdoor Air 20, Outdoor Air 30, Outdoor Air 40, Outdoor Air 50, Outdoor Air 60, Outdoor Air 70, Outdoor Air 80, Outdoor Air 90, and Outdoor Air 100. Each row has a 'record' button next to it.

The bottom screenshot shows the 'with Pressure Assist' configuration of the AFMS. The 'Base App' is set to 'AFMSOP.x or AFMSOP.x.s'. The 'AFMS Table' is displayed with the following columns: Outdoor Air Closed, Outdoor Air 5, Outdoor Air 10, Outdoor Air 15, Outdoor Air 20, Outdoor Air 30, Outdoor Air 40, Outdoor Air 50, Outdoor Air 60, Outdoor Air 70, Outdoor Air 80, Outdoor Air 90, and Outdoor Air 100. Each row has a 'record' button next to it.

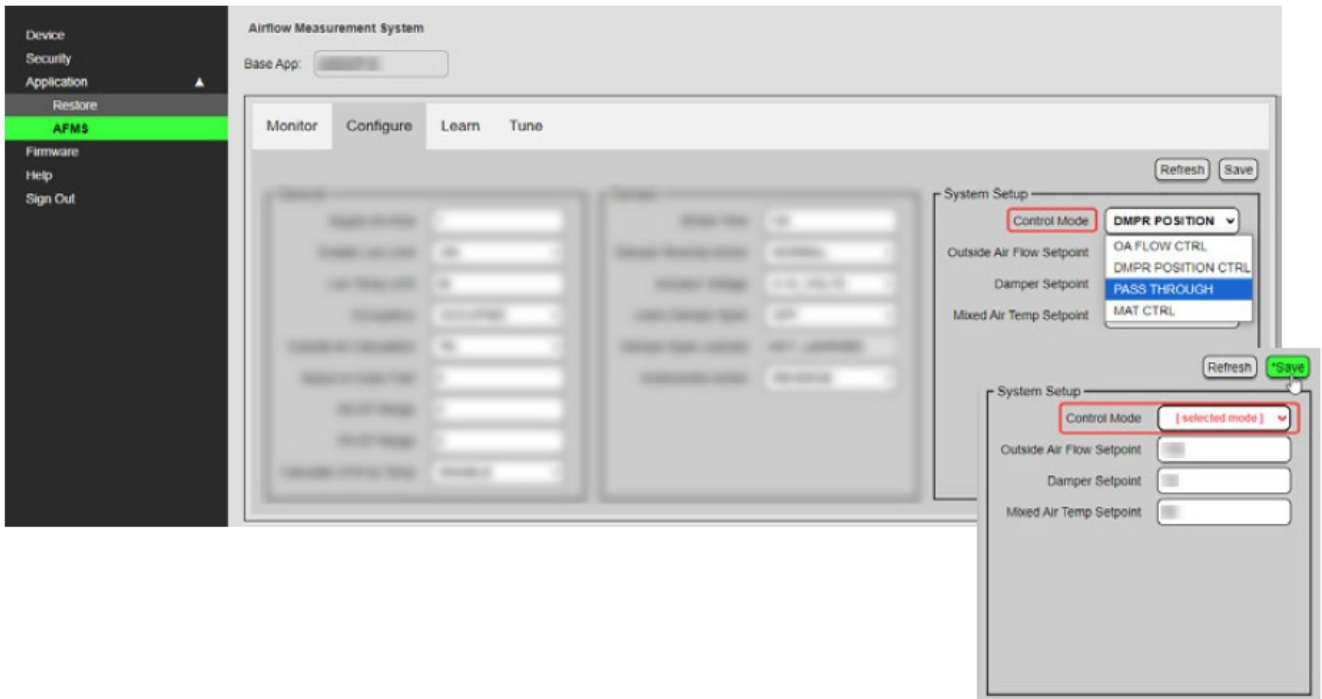
Set Control Mode

Under Application > AFMS > Configure, in the System Setup group:

1. For Control Mode, select from the drop-down menu the option that will be the AFMS's normal mode for this installation:

- OA FLOW CTRL: The AFMS modulates the damper actuator to maintain the Outside Air Flow Setpoint (CFM).
- PASS THROUGH: The AFMS passes control of the damper actuator to another controller. (The AFMS measures and monitors only.)
- MAT CTRL: The AFMS modulates the damper actuator to maintain the Mixed Air Temp Setpoint (°F/°C).

2. Click Save.



ABOUT TESTING AND BALANCING AFMS

If everything was installed and configured correctly before running Learning Mode, the AFMS Table data is very reliable. The AFMS uses the same method from ASHRAE Standard 111 (Section 7.6.3.3, “Flow Rate Approximation by Temperature Ratio”) that a good tester and balancer should use. Furthermore, as the AFMS performs the method, it takes the OAT, RAT, and MAT measurements simultaneously and several times for reliable averages, increasing the reliability of the data.

However, should verification be required, the following guidelines should be observed:

- Make measurements using NIST-traceable instruments.
- Use the method from ASHRAE Standard 111, Section 7.6.3.3, “Flow Rate Approximation by Temperature Ratio” to calculate the table data.
- Should an adjustment be needed, adjust single data items from the AFMS Table rather than making a linear adjustment.

NOTE:

TAB OA Factor (found in the Calibration group under Tune) should be at 1 and not adjusted.

If large adjustments need to be made to the AFMS Table data, one or more of the sensors may have been installed incorrectly, and/or a setting was misconfigured before running Learning Mode. The problem should be corrected by fixing the installation and/or configuration, and then running Learning Mode again.

DEVICE WINDOW

The Device window identifies the controller as a BACnet device and sets BACnet communication properties. The Device window also configures the controller for the Local Area Network (LAN). The new IP Address, Subnet Mask, and Default Gateway values are supplied by the building's IT department system administrator.

NOTE:

After changes in the window are saved, the controller will use the new settings and will require you to log in at the new address. If the controller is not on the same subnet as the network gateway router, it will not function correctly.

The Device window shows multiple parameters (which vary depending on whether IP or Ethernet is selected):

- **Device Name**—The name must be unique among all devices on the BACnet internetwork.
- **Description**—Optional information is not included in the device name.
- **Location**—An optional value that describes the controller's physical location.
- **Device Instance**—A number that identifies the controller on the internetwork. The device instance must be unique on the internetwork and in the range from 0–4,194,302. The device instance is assigned by the BACnet system designer. The default device instance is 1 and must be changed to a unique number to avoid conflict with other devices.
- **Number APDU Retries**—Indicates the maximum number of retries that an APDU (Application Layer Data Unit) is retransmitted.
- **APDU Timeout**—Indicates the time (in milliseconds) between retransmissions of an APDU requiring an acknowledgment for which no acknowledgment has been received.
- **APDU Seg. Timeout**—The Segment Timeout property indicates the time (in milliseconds) between retransmissions of an APDU segment.
- **Backup Failure Timeout**—The time (in seconds) that the controller must wait before ending a backup or restore procedure. Use KMC Connect, TotalControl, or Converge to back up the controller.
- **IP Address**—The internal or private network address of the controller. (To recover a lost address, see Recovering an Unknown IP Address.)
- **MAC**—The MAC address of the controller.
- **Subnet Mask**—The Subnet Mask determines which part of the IP address is used for a network identifier and

which part is used for a device identifier. The mask must match the mask for the network gateway router and other devices on the subnet.

- Default Gateway—The address of the network gateway router. The controller and gateway router must be part of the same LAN subnet.
- UDP Port—UDP (User Datagram Protocol) is an alternative communications protocol to TCP used primarily for establishing low-latency and loss-tolerating “connectionless” connections between applications on the Internet. The port is the “virtual channel” through which the data is transmitted and received.
- Restart Device—Restart the controller. This is similar to restarting the controller with a BACnet cold start from KMC Connect or TotalControl. A restart does not change properties or save changes not yet saved.

Username	Password	Access Level
admin	Enter New Password	Administrator
admin	Enter New Password	View Only
Enter Username	Enter New Password	Operator
Enter Username	Enter New Password	Administrator
Enter Username	Enter New Password	Custom
Enter Username	Enter New Password	
Enter Username	Enter New Password	
Enter Username	Enter New Password	
Enter Username	Enter New Password	

Access Level	Password
Level 1	0000
Level 2 (Admin)	1100

SECURITY WINDOW

The Security window sets user access to the controller:

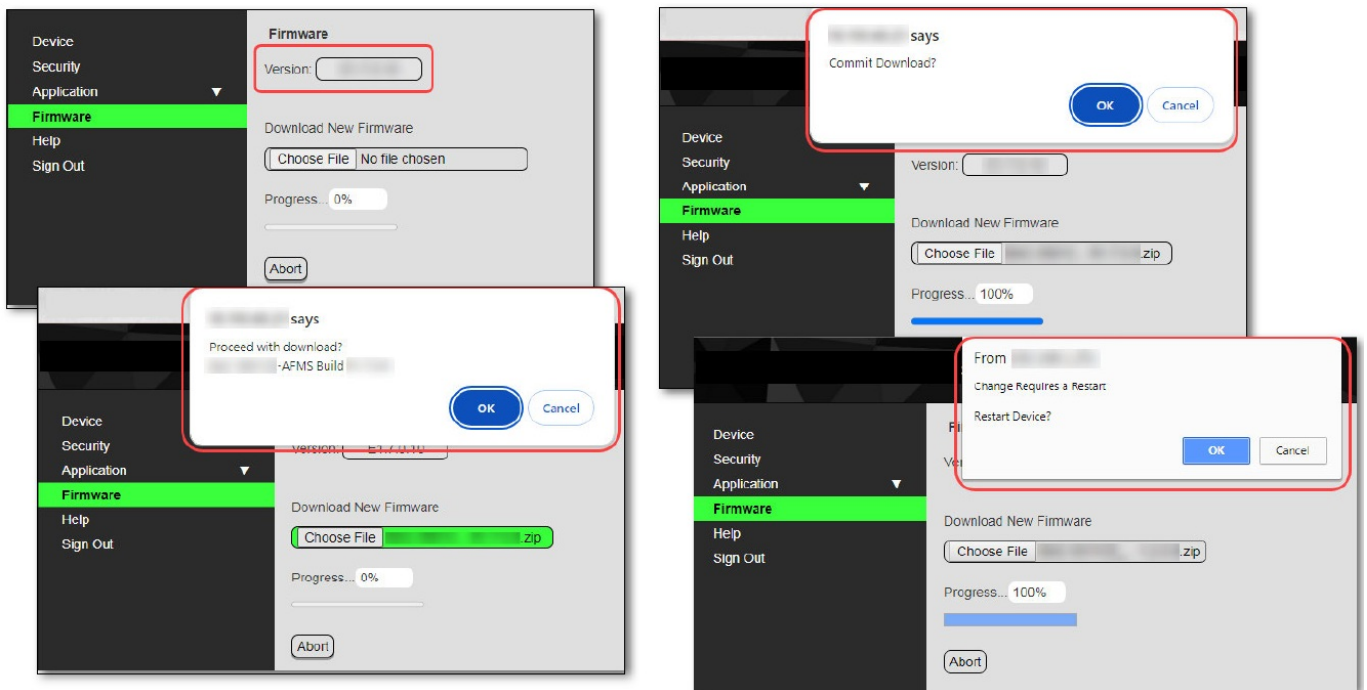
- During configuration, the default admin/admin defaults should be changed to enhance security.
- The user name list must include at least one name with Administrator privileges.
- User names and passwords are case-sensitive.

The controller has multiple levels of user access:

- A View Only user may view configuration pages but not make any changes.
- An Operator may make configuration changes but cannot modify security settings.
- An Administrator may make configuration and security changes.
- A Custom access user has a combination of access options as selected by an Administrator.

The NetSensor Passwords section provides the viewing of an option to change the passwords required to access

a controller using a Conquest STE-9000 series NetSensor or the KMC Connect Lite mobile app. These passwords are four digits, with each digit being a number 0 to 9. If all four numbers are 0, no password is required of the user for that level. For more information, see the Conquest Controllers Default Password Technical Bulletin after logging into the KMC Controls website.



FIRMWARE UPDATE WINDOW

The AFMS controller's firmware can be updated through the web browser after downloading the latest firmware from KMC Controls. To download from KMC Controls and install the firmware file onto the computer:

1. Log into the KMC Controls [website](#) and download the latest zipped firmware file from any AFMS controller's product page.
2. Find and extract the "Over-The-Network" (not the "HTO-1105_Kit") EXE file for the relevant model controller (which must be a "BAC-xxxxCE-AFMS" version of the firmware).
3. Run the BAC-xxxxCE-AFMS_x.x.x.x_OverTheNetwork.exe file.
4. Click Yes to allow Windows to install the program.
5. Click OK on the Firmware License dialog box.
6. Click Unzip in the WinZip Self-Extractor dialog box.

To then load the firmware from the computer into the controller:

1. Log in to the controller's web page. See Login Window.
2. In the controller's Firmware window, click Choose File, locate the new firmware zip file (it should be in a subfolder of C:\ProgramData\KMC Controls\Firmware Upgrade Manager\BACnet Family), and click Open.
3. After being asked if you want to proceed with the download, click OK and the new firmware starts loading into the controller.

NOTE: To cancel the update and leave the devices with the original firmware intact, click the Cancel or Abort button.

4. After the new firmware is loaded, you will be asked if you want to commit to the download. To finish the update, click OK.

5. To put the firmware change into effect, the controller will need to be restarted. When asked if you want to restart the device, click OK.
6. After the controller restarts, you will need to log in again to continue any additional configuration. See Login Window.



HELP WINDOW

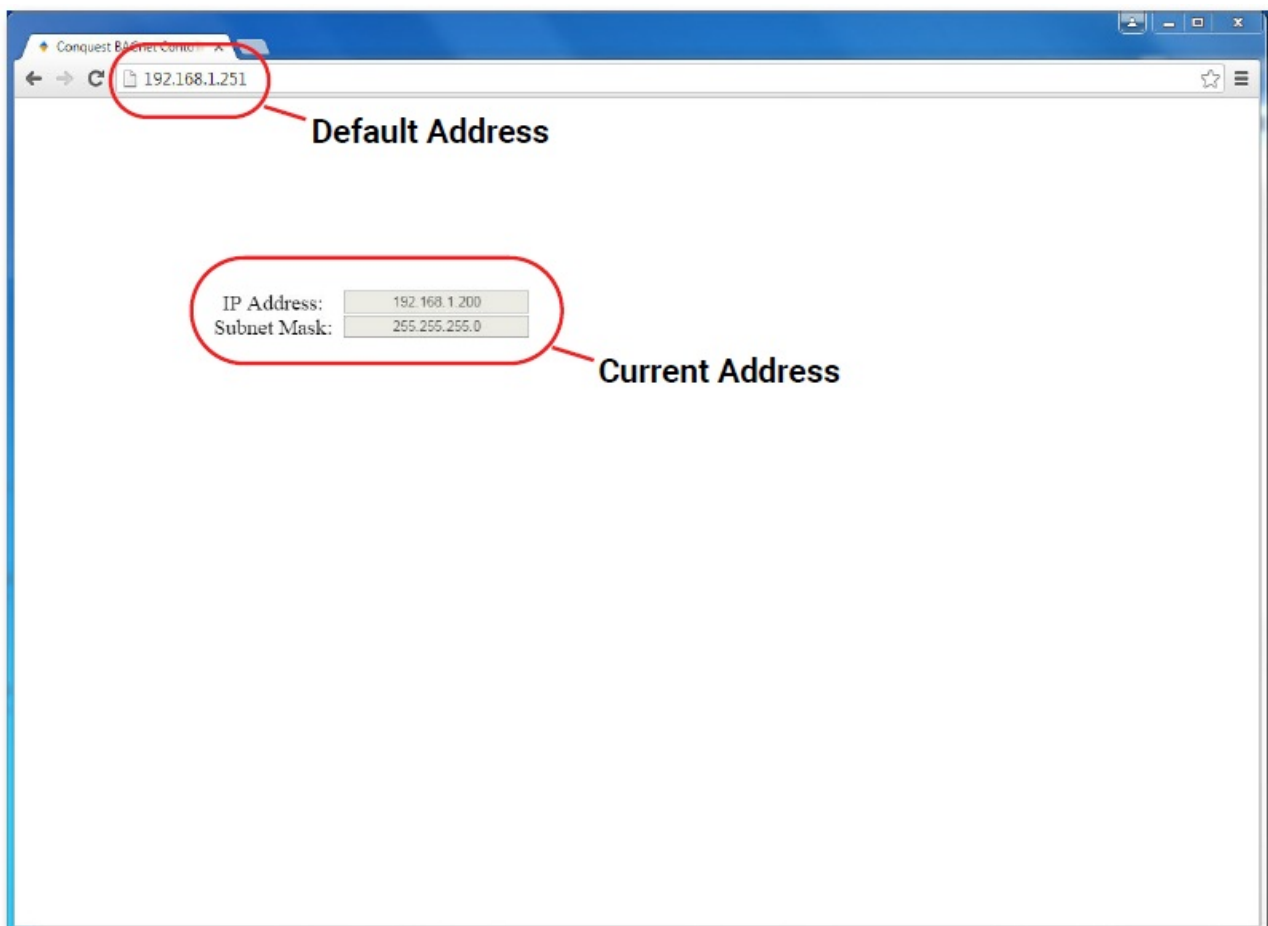
Go to KMC take you to the KMC Controls public website. Use the search to find the AFMS controller's product page. Look at the various files that can be downloaded. You will need an active Internet connection for the link to work.

NOTE:

Bulletins and firmware are available only after logging into the website.

RECOVERING AN UNKNOWN IP ADDRESS

If the network address of the controller is lost or unknown, the controller will respond to the default IP address for approximately the first 20 seconds after power is applied.



To discover an unknown IP address:

1. Disconnect the controller from the LAN and connect the controller as described in the Login Window.
2. On the computer, open a browser window and enter the default address of 192.168.1.251.
3. Reconnect the controller to the power source and immediately attempt to connect with the browser. The browser will respond with the controller's IP address and subnet mask.
4. Once the address is known, connect the controller to the relevant IP subnet for normal operation or controller configuration.

NOTE: A controller's IP address can also be seen in KMC Connect, TotalControl, and KMC Converge when the controller is properly connected to the network.

CHANGING YOUR COMPUTER'S ADDRESS

Introduction

To directly connect a computer to a controller, you must temporarily set the IP address of the computer to be compatible with the IP address of the controller. The IP address of a computer can be changed by using a utility or manually.

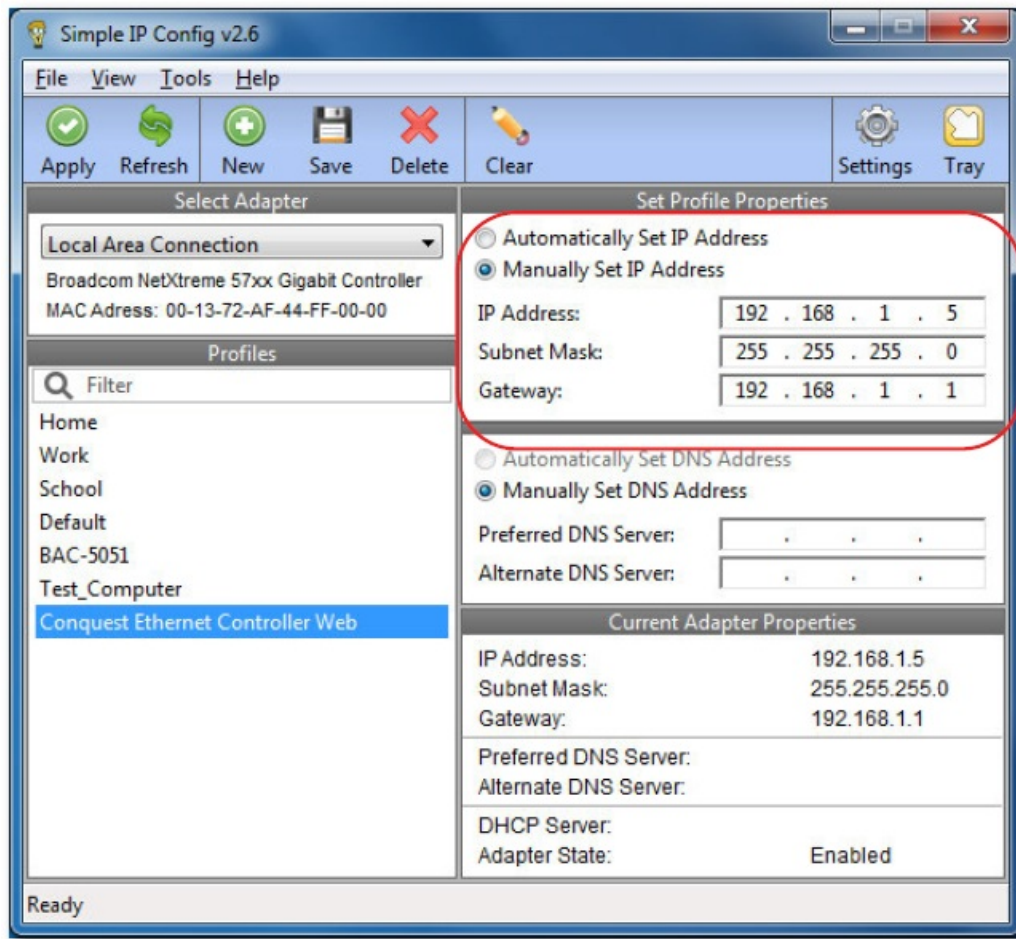
Change a Computer's IP Address with a Utility

The easiest method for users who will change their IP address on multiple occasions is to install an IP address changing utility (such as Simple IP Config available from [GitHub](#)). See the instructions with the software.

In the software:

1. Save a record/setting of your existing computer's address information.
2. Enter the following for the computer's temporary new IP address, Subnet mask, and Gateway:
 - IP address—192.168.1.x (where x is a number between 1 and 250)
 - Subnet mask—255.255.255.0
 - Gateway—Leave empty or unchanged (or if that does not work, use 192.168.1.***, where the last digits are different than the IP address in the computer or controller).

NOTE: After the configuration of the controller is complete, revert your computer to the original IP settings.



Change a Computer's IP Address Manually

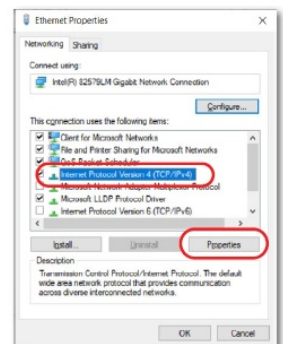
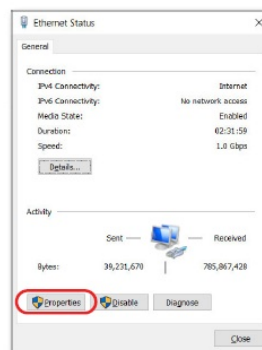
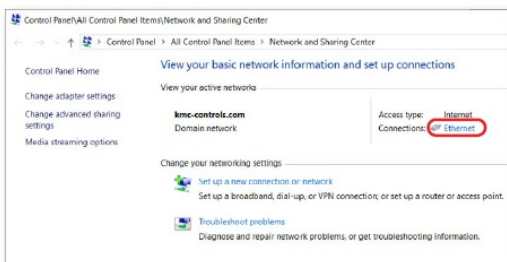
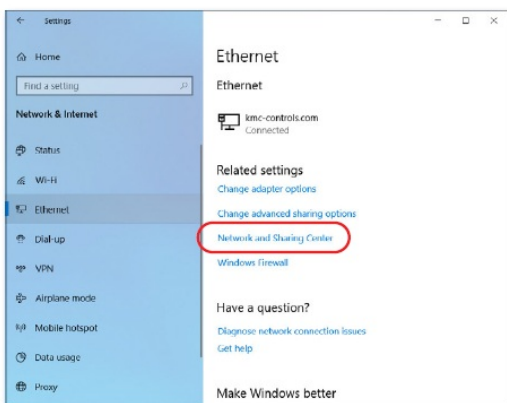
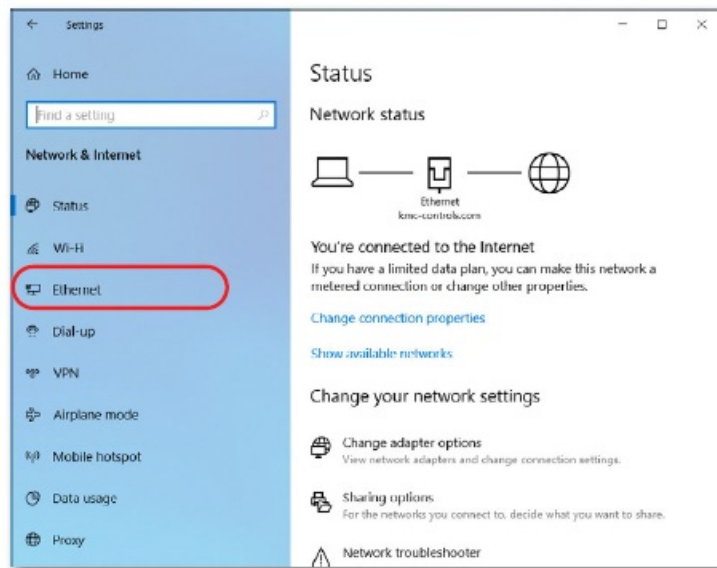
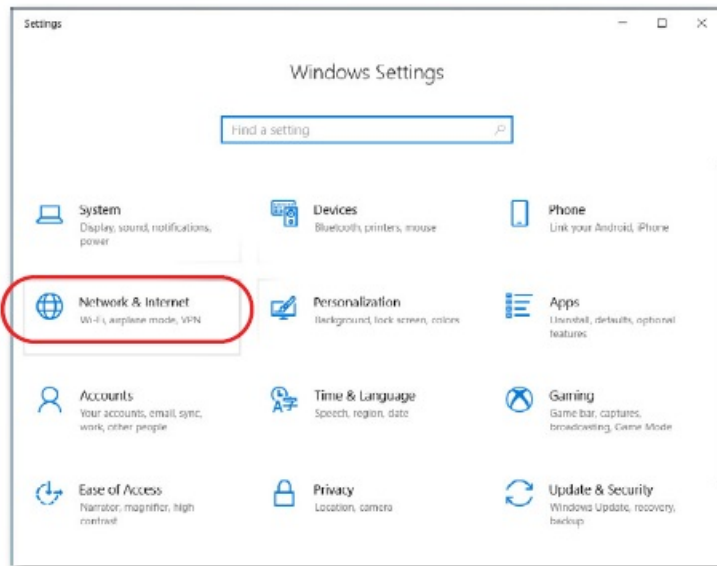
Introduction

To change your computer's IP address manually, follow the instructions (or the equivalent for your hardware and operating system) for Windows 10 (Settings) or Windows 7 (Control Panel).

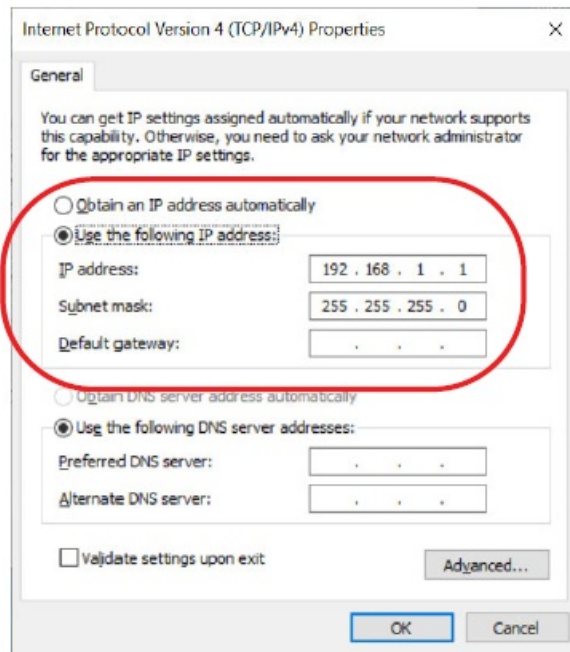
- **NOTE:** Screens will look different in different versions of Microsoft Windows.
- **NOTE:** Depending on the computer and version of Windows, the exact name for the connection to the controller may be Ethernet, Local Area Connection, or something similar.

Windows 10 (Settings)

1. Click the Start button.
2. In the Start menu, click Settings (the gear icon).
3. In Windows Settings, click Network and Internet.
4. Click Ethernet.
5. Click Network and Sharing Center.
6. Click Connections: Ethernet.
7. Click Properties.
8. Click Internet Protocol Version 4 (TCP/IPv4) and then Properties.



NOTE: If Obtain an IP address automatically is selected, the IP address and Subnet mask of the computer are not shown. They can be seen, however, by running ipconfig from a command prompt. To run ipconfig, type cmd in the Search box, at Command Prompt App press Enter, type in ipconfig at the prompt, and press Enter.

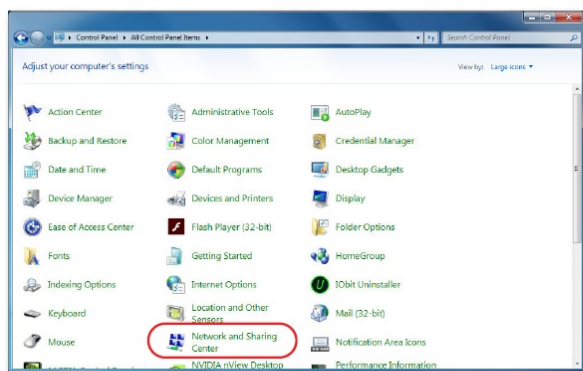


9. Record the existing settings of the Properties dialog.
10. Select Use the following IP address and then enter the following for the IP address, Subnet mask, and Gateway.
 - IP address—192.168.1.x (where x is a number between 2 and 255)
 - Subnet mask—255.255.255.0
 - Gateway—Leave empty or unchanged (or if that does not work, use 192.168.1.***, where the last digits are different than the IP address in the computer or controller).
11. When all information is correct, click OK and OK.

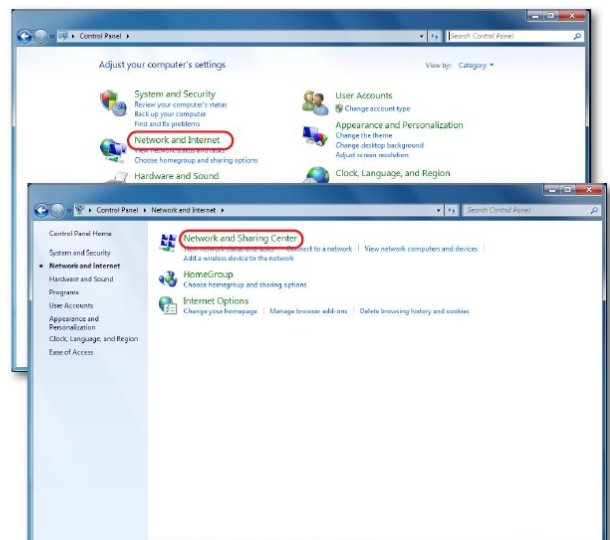
NOTE: The changes should take full effect after a few seconds.

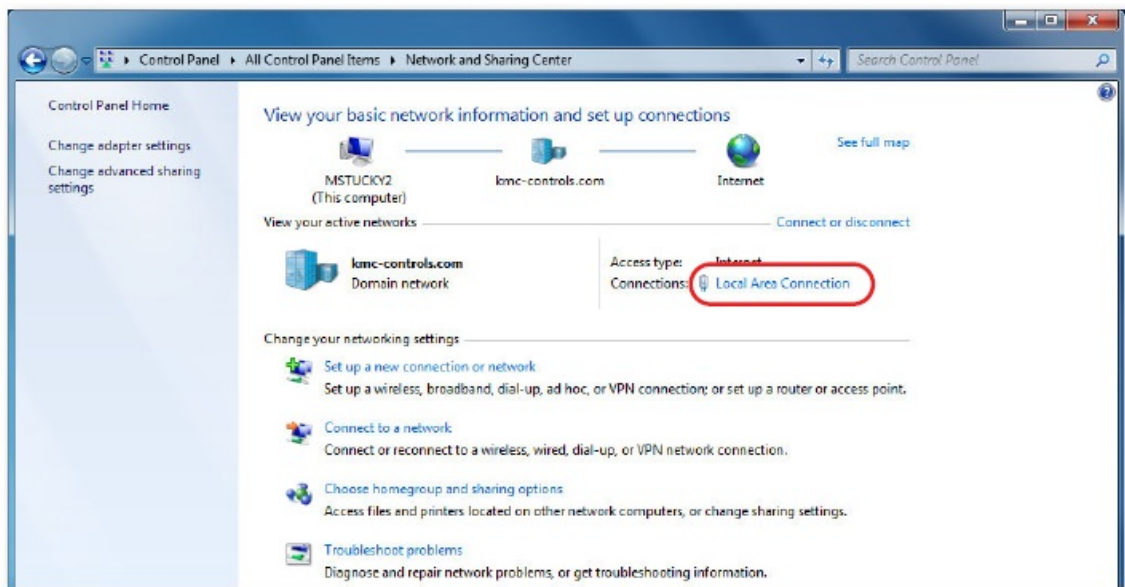
Windows 7 (Control Panel)

1. Click the Start button and select Control Panel.
2. From the Control Panel:
 - (When viewed by icons) click Network and Sharing Center.
 - (When viewed by category) click Network and Internet and then Network and Sharing Center.



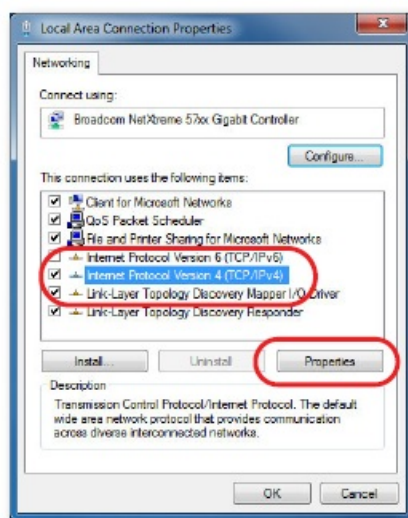
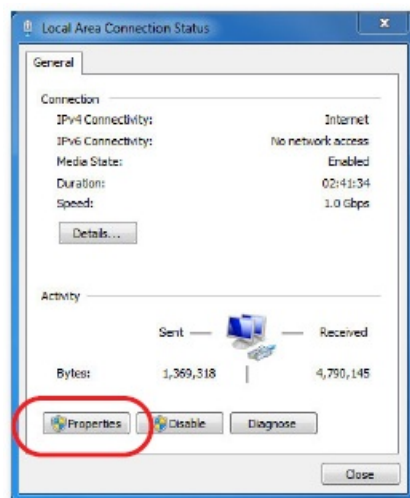
OR





3. Click the local connection for the LAN. Depending on the computer and version of Windows, the exact name for the connection may be Ethernet, Local Area Connection, or something similar.
4. In the Local Area Connection (or similar) Status dialog, click Properties.
5. Then click on Internet Protocol Version 4 (TCP/IPv4) and then click Properties.

NOTE: If Obtain an IP address automatically is selected, the IP address and subnet mask of the computer are not shown. They can be seen, however, by running ipconfig from a command prompt. To run ipconfig, click the Start button, type cmd in the Search box, press Enter, type in ipconfig at the prompt, and press Enter.



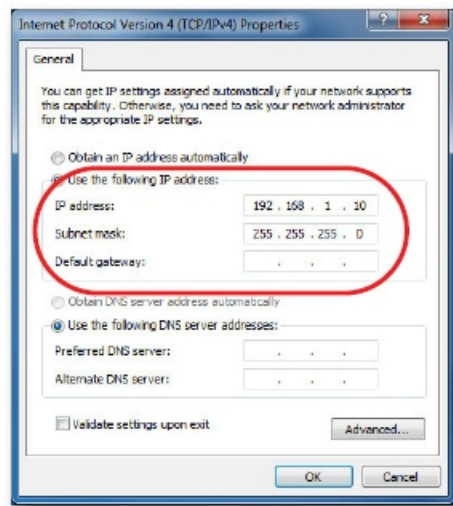
6. Record the existing settings of the Properties dialog.
7. In the Properties dialog, select Use the following IP address and then enter the following for the IP address,

Subnet mask, and Gateway.

- IP address—192.168.1.x (where x is a number between 1 and 250)
- Subnet mask—255.255.255.0
- Gateway—Leave empty or unchanged (or if that does not work, use 192.168.1.***, where the last digits are different than the IP address in the computer or controller)

8. When all information is correct, click OK and Close.

- **NOTE:** The changes should take full effect after a few seconds.
- **NOTE:** After the configuration of the controller is complete, repeat this process using the original IP settings.



TROUBLESHOOTING

- Check that the Ethernet connection cable is plugged into the Ethernet port and not the Room Sensor port.
- Check the network and connections.
- Restart the controller. See the Resetting Controllers section in the [KMC Conquest Controller Application Guide](#).
- Review IP address and login information. See Introduction, Login Window, and Changing Your Computer's Address.
- See Communication Issues—Ethernet section in the [KMC Conquest Controller Application Guide](#).

HANDLING PRECAUTIONS

For digital and electronic sensors, thermostats, and controllers, take reasonable precautions to prevent electrostatic discharges to the devices when installing, servicing, or operating them. Discharge accumulated static electricity by touching one's hand to a securely grounded object before working with each device.



IMPORTANT NOTICES


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- The KMC Connect Lite™ app for NFC configuration is protected under United States Patent Number 10,006,654.
- Pat. <https://www.kmccontrols.com/patents/>.

SUPPORT

Additional resources for installation, configuration, application, operation, programming, upgrading, and much more are available on the KMC Controls website (www.kmccontrols.com). Viewing all available files requires logging in to the site.

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Documents / Resources

	<p>KMC CONTROLS 5901 Airflow Measurement System [pdf] User Guide 5901, 5901 Airflow Measurement System, Airflow Measurement System, Measurement System, System</p>
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References

- [KMC Controls | Building Automation and Control Solutions](#)
- [User Manual](#)

[Manuals+](#), [Privacy Policy](#)

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